FOR MYSORE STATE

P. W. (1956) Department.

Ms SERIES.

G.O. No. 1473

Dated 21-3-1956

Passed
Hon'ble
Supdt
S
31/3/56

[Despatch Abstract.]

Communications - Bridges - South Kanara district - Constructing bridge across Gurpur river near Kulur at mile 4/7-8 of Manjeshwar Baindur road - Revised estimate for Rs 8.76 - Approved.

HIGHWAYS DEPARTMENT

From
Sri K. K. Nambiar, B.E.,
M.I.E.(Ind), F.Inst.H.E.(Eng),
M.I.Mun.E.(Eng), M.Am.Soc.C.E.
Chief Engineer (Highways),
Chepauk, Madras-5.

To
The Secretary to Government,
Public Works Department,
Fort St. George,
Madras-9.

LETTER No. I0972-E4/55-I DATED I9-5-55.

41913

ASST. SECRETARY TO GOVERNMENT
23 MAY 1955
PUBLIC WORKS DEPARTMENT

Sir,

SUB: COMMUNICATIONS - Bridges - South Kanara District - Constructing a bridge across Gurpur river near Kulur at mile 4/7-8 of ~~Mageswar~~ Baindur road (locally known as Coast Road) - Revised administrative approval - requested.

REF: G.O.Ms.No.516 P.W.D. dated I4-2-1954.

****

I forward herewith a revised estimate for the above work for Rs.8.76 lakhs with a comparative statement showing the differences between the original and the revised estimate.

Administrative approval for the above work was accorded for Rs.5.40 lakhs in G.O.Ms.No.516 P.W.D. dated I4-2-1949 and the estimate was technically sanctioned by me for Rs.5.90 lakhs.

The revised estimate amounts to Rs.8.76 lakhs. The excess is mainly due to the high tender premium of 55.36% above the estimate rates. The excess on this account is Rs.2.89 lakhs. In the two items of land acquisition and earthwork for approach road, the provisions in the original estimate have been exceeded by Rs.56,000/- due to the provisions in the original estimate being insufficient. Other minor changes or provisions such as sliding plate bearings etc. have added a little extra cost of Rs.8000/- Detailed notes on the differences are furnished in the specification report and in the comparative statement.

In view of the above, I request revised administrative approval for Rs.8.76 lakhs may kindly be accorded and communicated to me early.

K.P. Nambiar 19.5.55
for Chief Engineer (Highways).

Encl:
~~One~~ Two Revised Estimates.

VS.I9/5,

2

S/3/5

P.W(A2)

Memo No. 4193 A/55-1 Dated 31-5-55

Subt: (as on p.1 ante).

Ref:- From the CE(H) letter No. 10972-E4/55-1 dated 19-5-55

—:—

The bridge work was completed ~~(and opened to traffic) in September~~ 1952, but the revised estimate ~~has~~ is ~~been~~ submitted only now, after a period of 2 years 10 months. The C.E. is requested to state why the revised estimate was not submitted in time and what action has been taken by him in the matter

by D.O. No. 2543 PW/12.652 dt. 31.5.55

31.5.55

30/5/55

30-5-55

CENTRAL DESPATCH To the CE(H)

Date 19

Initials

41913/55

3

From
Sri K.K.Nambiar, B.E.M.I.E.(Ind).
F.Inst.H.E.(Eng)M.I.Mun.E. (Eng).
M.Am.Soc.,C.E.,
Chief Engineer (Highways),
Chepauk, Madras. 5.

To
The Secretary to Government,
Public Works Department,
Fort. St. George, Madras. 9.

Letter No. 10972 E4/55-3 dated: 23rd June. 1955.

Sir,

SECRETARY TO GOVT. 27 JUN 1955

Sub: Communications--Bridges--South Kanara District--Constructing ~~x bridge~~ bridge across Gurpur river near Kulur at Mile 4/7-8 of Nageswar Baindur road--Revised administrative approval--Reg:--

53954 Prs.

Ref: From Govt.P.W.D.Memo No.41913 A/55-1 dated 31.5.55.

****

The matter has been referred to the Superintending Engineer (Highways) and his reply is awaited. A reply will be sent to Government on receipt of the Superintending Engineer's (Highways) report.

PW(A2) 25/7/55

for Chief Engineer (Highways).
25.6.55

Gs.24.6.

25/6/55

28.6.55

27/6/55

12/297 4

P.W (#2)

Memo No. K/1913 A/55 - 21 Dated 28-7-55

Subt. (as on p3 ante)

Ref:- From Ke CE(H) letter No. 10972-EK/55-3 dated 22-6-55 p3 ante

Ke CE(H) is requested to send his final reply at a very early date.

M 28.4.55

28/7/55

Kew 29.7.55

To Ke CE(H) NR 25/8

[illegible] Initials.

Date

HIGHWAYS DEPARTMENT.

From
Sri K.K.Nambiar, B.E., M.I.E.(Ind)., F.Inst.H.E.(Eng) M.I.Mun.E.(Eng)., M.Am.Soc., C.E.,
Chief Engineer (Highways),
Chepauk, Madras.5.

To
The Secretary to Government,
Public Works Department

SECRETARIAT TO GOVERNMENT
11 AUG 1955
3022
PUBLIC WORKS DEPARTMENT

LETTER NO. 10972-E4-55-5 DATED 8-8-55

Sir,

SUB: Communications - Bridges - South Kanara District - Constructing bridge across Gurpur river near Kulur at Mile 4/=7- of Nageswar Baindur road-Revised administration approval regarding.

Ref: From Govt. P.W.D.Memo No.41913-A/55-2 dated 28-7-55.

Final reply will be sent to Government on receipt of the particulars from the Superintending Engineer(Highways)Cannanore who is being specially reminded to expedite his report.

for Chief Engineer(Highways)

6.

7/9

P.W(A2)

Memo No. 4/913 A/55 — 3 Dated 6-9-55

Sub:- (as on p5 ante)

Ref:- From the CE(H) letter No. 10972 — E4/55-5 p5
dt 8-8-55

The CE(H) is requested to send his final reply at an early date.

A
6-9-55

Kuw
6.9.55

M
6-9-55

To
The CE(H)
N.A.

41913/55

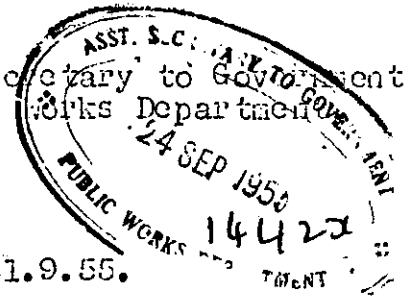
7

HIGHWAYS DEPARTMENT.

From
Sri K.K.Nambiar, B.E.
M.I.E. (Ind), F.Inst.H.E. (Eng)
M.I.Mun (E. (Eng) M.Am.Soc.C.E.,
Chief Engineer (Highways)
CHEPAUK--Madras.5.

To

The Secretary to Government,
Public Works Department,
MADRAS.



LETTER No. 10972.E4/55.8 dated 21.9.55.

Sir,

Sub: COMMUNICATIONS Bridges--South Kanara District--Constructing bridge across Gurpur River near Kulur at mile 4/7-8 of Manjeswar Bandur road--Revised administrative approval.

Ref: From Government, Public Works Department Memorandum No.41913.A/55.3 dated 6.9.55.

***

The report called for from the Superintending Engineer (Highways) Cannanore Circle is awaited. He has been reminded by a D.O. dated 6.9.55. Final reply will be sent to Government on receipt of Superintending Engineer's (Highway) report.

for CHIEF ENGINEER (HIGHWAYS)

21.9.sm.

92/111 8

P.W(A2)

Memo No. 41913 A/55 – 4 Dated 31.10.55

Subs: (as on p7 ante)

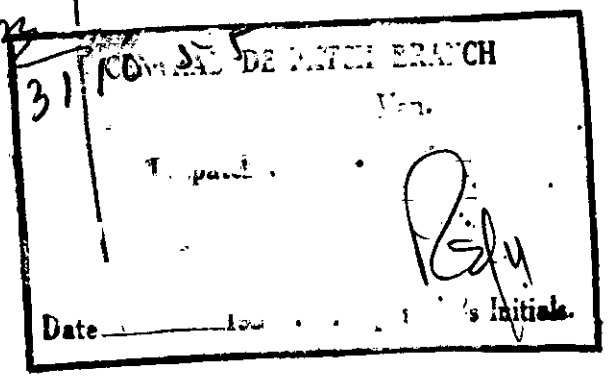
Ref: – From the CE(H) letter No. 10972-E4/55-8 dated. 21-9-55 p7.

Encl: 1.

The CE(H) is requested to send his final reply at an early date.

30.10.55

31.10.55



To

The CE(H)

N K

2:7.

41913/55

7

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HIGHWAYS DEPARTMENT

From
Sri K.K.Namboiar, B.E., A.M.I.E., (Ind)
F.Inst.H.E., (Eng) M.I.Mun.E., (Eng)
M.Am.Soc.C.E.,
Chief Engineer (Highways),
Chepauk, Madras.5.

To
The Secretary to Government,
Public Works Department,
Fort St. George,
Madras.9.

SECRETARY TO GOVERNMENT
12 NOV 1955
PUBLIC WORKS DEPARTMENT

Letter No.10972 E4/55-12 dated 10-11-55.

Sir,

Sub: Communications - Bridges - South Kanara District - Constructing bridge across Gurupur River near Kulur at Mile 4/7-8 of Manjeswar Baindur road - Revised administrative approval--

Ref: From Govt. P.W.D. Memo No.41913 A/55-4 dated 31-10-55.

The Superintending Engineer (Highways) Cannanore is being specially referred to in the matter. Final reply will be sent to Government as early as possible.

P.W.(A2)

A.R. till 10/10/55.

K.P. Nambiar 10.11.55
for Chief Engineer (Highways)

pm.10.11. 12.11.55 15-11-55

BS/Lon 10

P.W(A2)

Memo No 41913A/55-5 Dated 16-12-55

Sub:- (as on pg ante)

Ref:- From: THCE(H) letter No. 10972-E4/55-12 dated 10-11-55 pg 9 ante

THCE(H) is requested to expedite his final reply.

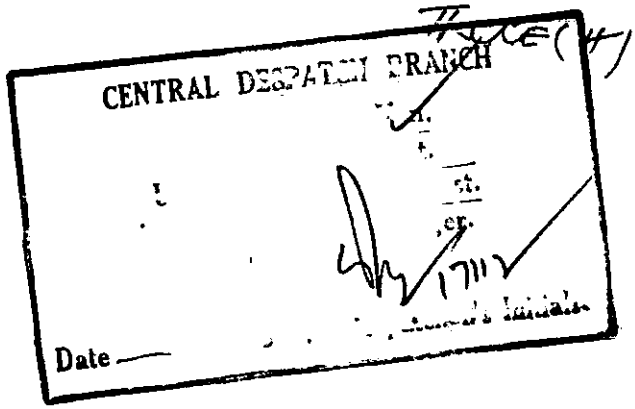
MJ 16.12.55

15/12/55

Kion 15-12-55

To

THCE(H)



HIGHWAYS DEPARTMENT

From

SRI.K.K.NAMBIAR, B.E., M.I.E(Ind)., F.Inst.H.E.,(Eng).M.I.Mun.E.,(Eng)., M.Am.Soc.C.E., Chief Engineer (Highways) Chepauk, Madras.5.

To

The Secretary, Public Works Department, MADRAS.

31 DEC 1955 PUBLIC WORKS DEPARTMENT

Letter No.10972-E4/55-14 Dated 28-12-55.

Sir,

Sub: Communications- Bridges - South Kanara District- Constructing a bridge across Gurpur river near Kulur at Mile 4/7-8 of Nageshwar Baindur road (locally known as Court road)- Revised administrative approval -

Ref: P.W.D. Memo No.41913 A/55-1 Dated 31st May 1955 and Memo dated 16-12-55.

With reference to the Memo cited above I have to state as follows:

The work in the Mangalore Division (regular) to which the above work relates has fallen into arrears due to the heavy volume of the work with inadequate staff in the division office. From July 1952 to May 1955 there were on an average 6 sub-divisions working under this division apart from the three special sub-divisions sanctioned during 1954 for community projects and National Extension service works.whose work has also to be guided. Just at present the division has four regular sub divisions, 5 special sub divisions and three additional sub divisions under the National Extension service and Community project making in all 12 sub divisions the work of which has to be controlled or guided. In this connection I am to add that normally a division will comprise of about 4 sub divisions. The Government also have been addressed regarding this matter in my letter No.54771 A1/54-15 dated 21-11-55.

2/ Ultimately this inadequacy of the staff in the division office due to the heavy work involved naturally, resulted in the delay of submitting the revised estimate for the above work.

3/ I therefore request the Government that the above state of affairs may be considered and the conversion of the existing 2 special divisions into execution divisions may therefore be approved.

K.P. Nambiar 29.12.55

For Chief Engineer (Highways)

M.A. 28/12.

13

Draft-I

P.W.D(A-2).

SUB: COMMUNICATIONS - Bridges - South Kanara District - Constructing bridge across Gurpur river near Kulur at mile 4/7-8 of Manjeshwar Baindur road - Revised estimate for Rs 8.76 lakhs - Approved.

Read: G.O.No.516 P.W., dated 5-2-1949
From the C.E.(H), Letter No. 10972-E4/55-1, dated 19-5-55.
From the C.E.(H), Lr.No.10972-E4/55-14, dated 28-12-55.

G.O.MS.NO. 1473 DATED 21.3.56

The Govt. approve the revised estimate for Rs 8,76,000 (Rupees eight lakhs and seventy six thousand only) submitted by the C.E.(H) for the work of constructing a bridge across the Gurpur river near Kulur at mile 4/7-8 of the Manjeshwar Baindur road in South Kanara District in lieu of the estimate for Rs 5.40 lakhs sanctioned in G.O. No.516 P.W., dated 5-2-1949.

To
The C.E.(H).
The A.G., thro. Finance.
Duplicate copy to the A.G., Madras.
(By name).
(2 s/cs.)

Draft II

MEMO NO. 41913A/55-7 DATED 17-3-56

Sub: Communications - Bridges - South Kanara District - Constructing bridge across Gurpur river near Kulur at mile 4/7-8 of Manjeshwar Baindur road - Revised estimate - Approved.

P.T.O.

14

-2-

Ref: From the C.E.(H), Letter No.10972-E4/55-1, dated 19-5-55..
From the C.E.(H), Letter No.10972-E4/55-14, dated 28-12-55.

It is observed that the revised estimate for Rs 8.76 lakhs for the bridge work now submitted by the C.E. exceeds the administratively approved estimate for Rs 5.40 lakhs by 62.2 per cent and that though the bridge was completed and opened to public traffic on 1-7-52 the revised estimate was submitted for approval of the Govt. only in May 1955. The Govt. consider that the excess over the sanctioned estimate is far too much and that the delay of over 3 years in sending the revised estimate is unthinkable long.

The C.E. is requested to instruct the officers of the Deptt. to obtain the revised approval of the competent authority as soon as the cost of a work is found to exceed the sanctioned amount by more than 10 per cent during the course of execution.

15/3/56.

16.3.56

17.3.56

To

The C.E.(H).

(3 Cs)

Sub: Communications - Bridges - South Kanara district - Constructing bridge across Gurpur river near Kulur at mile 4/7-8 of Manjeshwar Baindur road - Revised estimate for Rs 8.76 lakhs - Approval

Ref: From the C.E.(H) LrNo.10972-E4/55-1, d/19-5-55
From - do - 10972-E4/55-14 d/28-12-55.

....

The proposal in this file is to approve a revised estimate for Rs 8.76 lakhs for the work of constructing a bridge across the Gurpur river near Kulur at mile 4/7-8 of the Manjeshwar Baindur road in South Kanara district .

2. In G.O.No.516, P.W., dated 15-2-1949 the Govt. approved an estimate for Rs 5.40 lakhs for this bridge work. The C.E. has stated that the estimate for the work was technically sanctioned by him for Rs 5.90 lakhs. He has now submitted a revised estimate for Rs 8.76 lakhs for the work for the approval of Govt. The revised estimate for Rs 8.76 lakhs now submitted by the C.E. exceeds the administratively sanctioned estimate for Rs 5.40 lakhs by 62.22 per cent and the technically sanctioned estimate for Rs 5.90 lakhs by 48.4 per cent. The C.E. has reported that the excess is mainly due to the high tender premium of 55.36 per cent above the estimate rates and also due to additional provisions required for sinking of wells, earthwork for approach road and other minor charges.

The bridge was completed and opened to public traffic on 1-7-1952. Tolls are being levied to recoup the amount spent on the bridge work. The C.E. has stated that the delay in submitting the revised estimate is due to heavy work and inadequacy of staff in the Mangalore Division.

3. The revised estimate for Rs 8.76 lakhs for the bridge work now submitted by the C.E. may be approved. It is for consideration whether the C.E may, at the same time, be requested to instruct the

E.B

officers of the Highways Dept. to obtain the revised approval of the competent authority as soon as the cost of a work is found to exceed the sanctioned amount by more than 10 per cent during the course of execution.

4. After orders are passed the file may be sent to Finance for remarks.

1.2.56 2.2.56 4.2.56

1.2.56

The suggestions in para 3 above may be approved - the fact that the excess over the sanctioned estimate is far too much and that the delay of over 3 years in sending the revised estimate is unthinkably long may be pointed out to the CE(H).

6.2.56

Fin

Finance(EB)

The proposal of P.W. at N above may be agreed to. (Necessary for the excess of Rs 3.36 lakhs are given at S no p (above) Dt. (for the) may see

[This work is in South Kanara Dt.

7-2-56 10.2.56 11/2/56 P.W

P.W.D. U.O. No. 4191 3A/55-6 6-2-56

8-FEB 1956 8.76 3.40 3.36 4191

Fin. U.O. 12217 EB

ASST. SECRETARY TO GOVERNMENT 1135 13 FEB 1956 PUBLIC WORKS DEPARTMENT

P.W.(A-2).

NOTE FOR CIRCULATION.

The proposal in this file is to approve a revised estimate for Rs 8.76 lakhs for the work of constructing a bridge across the Gurpur river near Kulur at mile 4/7-8 of the Manjeshwar Baindur road in South Kanara District.

2. In G.O.No.516, P.W., dated 15-2-1949 the Govt. approved an estimate for Rs 5.40 lakhs for this bridge work. The C.E. has stated that the estimate for the work was technically sanctioned by him for Rs 5.90 lakhs. He has now submitted a revised estimate for Rs 8.76 lakhs for the work for the approval of Govt. The revised estimate for Rs 8.76 lakhs now submitted by the C.E. exceeds the administratively sanctioned estimate for Rs 5.40 lakhs by 62.22 per cent and the technically sanctioned estimate for Rs 5.90 lakhs by 48.4 per cent. The C.E. has reported that the excess is mainly due to the high tender premium of 55.36 per cent above the estimate rates and also due to additional provisions required for sinking of wells, earthwork for approach road and other minor changes.

The bridge was completed and opened to public traffic on 1-7-1952. Tolls are being levied to recoup the amount spent on the bridge work. The C.E. has stated that the delay in submitting the revised estimate is due to heavy work and inadequacy of staff in the Mangalore Division.

P.T.O.

Crl. 41913A/55

334/2912

3. This Deptt. have proposed that the revised estimate for Rs 8.76 lakhs for the bridge work submitted by the C.E. may be approved. This Deptt. have, however, proposed to point out to the C.E. that as the excess over the sanctioned estimate is far too much the delay of over 3 years in sending the revised estimate is unthinkably long. It is also proposed to ask the C.E. to instruct the officers of the Highways Deptt. to obtain the revised approval of the competent authority as soon as the cost of a work is found to exceed the sanctioned amount by more than 10 per cent during the course of execution. Finance agree.

a 3 p1 ante

M on p2 ante

para 3 on p1-2 ante

✓ p2 ante

4. The file may be circulated to M (W) and M (F & E) for approval of the revised estimate for Rs 8.76 lakhs for the bridge work.

24/2/56
Kwr 25.2.56

A.J. Chandy 27.2.56
A.S., P.W.D

K.V. Raghavanan 29.2.56

M(W) [illegible] 1/3

M(F+E) K. Subramaniam 4.3.56

A draft order and a draft memo to the CE(H) are submitted for approval.

15/2/56
Kwr 15.3.56

16.3.56

Ver 5.3.56

Ver 17.3.56

REPORT TO ACCOMPANY THE REVISED ESTIMATE FOR RECONSTRUCTING A BRIDGE AT MILE 4/7-8 OF MANGALORE BAINDUR COAST ROAD NEAR KULUR OVER GURPUR RIVER:

Original Estimate. 5.90 lakhs.
Revised Estimate: 8.76 lakhs.

The original estimate for the above work was sanctioned for Rs. 5.90 lakhs in Chief Engineer (Highways) Estimate No. 37 of 1949-1950. The work has been completed and the revised estimate generally provides for quantities as per execution.

2. The excess amount of revised estimate over the original estimate is Rs. 2.86 ~~2.06~~ lakhs. The excess is mainly due to higher quoted rates by the contractors. The tender premium works out to 55.36%. The excess on this account is Rs. 289000/-. In cases such as sinking of wells, earthwork for approach road etc., the quantities have exceeded the provision in the original estimate as actually required. Even in the superstructure, the quantity of R.C. work required for cross beams and the beams of the Bow string girders have increased since enough provisions were not made in the original estimate towards haunches and widening of the beams and the excess on this account is Rs. 17000/-. In the case of the cost of roller bearings and the cost of land acquisition, the provision in the original estimate was found to be insufficient. Provisions are now made in the revised estimate considering the actual cost and the excess due to this amounts to Rs. 43000/-. Other minor items such as sliding bearings, loss incurred by the Contractor towards the damage of the islands, photographic charges etc are provided and the excess on this account is Rs. 7215/-.

3. The various deviations made are the following:
(i) Wells under piers Nos. 3 and 4 were sunk beyond the estimated depth since the soils met with at estimated depth was found to be of low bearing capacity. The wells under Pier No.2 have been stopped above the estimated depth as the soil met with was found to be very hard. The levels to which the wells are sunk are given below, comparing the same with the provisions in the original estimate.

Pier No.	Original Estimate.	Revised Estimate.
2.	50.00	72.10
3.	55.00	51.70
4.	60.00	50.90

The depth of sinking has been reckoned from R.L. 93.58 instead 89.58 as in original estimate.

ii) Circular reinforcements of 1/2" diameter have been provided to take up the hoop tension in the steining of wells.

iii) The top of the capping slabs are laid at a higher level in Piers No.3 and 4 i.e. at 91.65 instead at 90.63 since the water level was higher during execution.

b) Provision has been made for the fixed end bed blocks of the bowstring girders adopting a new design.

c) i) Filling in of concrete on Pier No.2 in between the bowstring and the tee beam has been omitted and instead, the deck slab of the bowstring girder has been extended.

ii) The size of the wind braces has been changed to 11" x21" from 12" x 21".

4. The volume of the earthwork required for the approaches has increased. Provision is also now made to revet the embankment in portions where they are higher than 6', in the approach road formation.

5. Provision is also made towards the construction of pylons in the four corners of the bridge to give attractive appearance.

The provision made in the original estimate towards baling out water, gravel backing, unforeseen charges, construction of temporary sheds have been deleted as these items are not required.

Major supervision charges provided inthe original estimate also have been deleted as the same is not required for this work.

K.K.Nambiar,
Chief Engineer (Highways).

(TRUE COPY).

C.N. Parameshwara Rao 18.5.77

TECHNICAL ASSISTANT TO THE
CHIEF ENGINEER (HIGHWAYS).

Gs.

ESTIMATE ABSTRACT:

CONSTRUCTING A BRIDGE OVER GURPUR RIVER AT MILE 4/7-8 OF MANGALORE BAINDUR COAST ROAD.

Quantity. (1)	Description of work. (2)	Rate. (3)	Per- (4)	Amount. (5).
1.a) 5600 Cft.	Earthwork excavation for foundations of the pier, abutment in all soils including rock requiring blasting above water level including all leads and lifts.	39.0.0	1000 Cft.	218
b) 3200 Cft.	Earthwork excavation for foundation in all soils excluding rock requiring blasting below water level including shoring strutting baling out water, all leads and lifts complete.	195.0.0	1000 Cft.	624
2. 2700 Cft.	Reinforced Cement concrete (1:2:4 with 3/4" size hard broken granite chips including cost of Cement, steel cantering charges baling out water etc complete for curbs.	5.10.6	Cft.	15272
3.a. 502 Rft.	Sinking of R.C.C. Rectangular wells in all soils including forming islands, baling out water etc. for pier wells (9' x 12" external diameter)	136.8.0	1 Rft.	68523
b. 142 Rft.	Pier 6 and abutment (8' x 9') External diameter.	87.12.0	1 Rft.	12461
				97098
4. 29700 Cft.	Cement Concrete (1:3:6) mix with 1½" size hard broken granite metal including cost of Cement, form works, baling out water etc complete for well steining.	245.11.0	100 Cft.	72969
5. 4650 Cft.	Cement Concrete 1:2:4 mix with 1½" size hard broken granite metal including cost of cement for bottom plugging of wells.	229.2.0	100 Cft.	10654
6. 16100 Cft.	Filling with river sand in layers including ramming.	19.8.0	100 Cft.	3140
				183861
7. 2050 Cft.	Cement concrete 1:4:8 mix with 1½" size hard granite metal including cost of Cement, baling out charges etc for top plugging of wells.	157.15.3	100 Cft.	3238
8. 2780 Cft.	Reinforced Cement Concrete (1:2:4) with 3/4" hard granite chips including cost of Cement, steel, centering charges baling out water etc complete for capping slabs.	6.13.3	per Cft.	18982
9. 660 Cft.	Cement concrete (1:3:6) mix with 1½" size hard granite metal inclusive of cost of cement for foundation under abutment.	170.10.0	100 Cft.	1126
10.a. 8700 Cft.	Coursed rubble stone masonry 2nd sort in C.M. 1:5 including cost of Cement.	185.4.0	100 Cft.	16116
10.b.				
				223323

1.	2.	3.	4.	5.
				223323
10.b.28600 Cft.	Coursed rubble stone masonry I sort in C.M. 1:5 including cost of Cement.	204.12.0	100 Cft.	58559
11.	Reinforced Cement concrete 1:2:4 with 3/4" size hard broken granite metal including cost of cement, steel and centering charges etc. complete.			
a. 420 Cft.	for bed blocks under Tee ribs.	5.15.6	1 Cft.	2507
b. 365 Cft.	For bed blocks under Bowstring girder.	8.6.6	Cft.	3068
b2. 820 Cft.	Reinforced Cement concretel:1:2 mix with 3/4" size hard granite broken metal inclusive of cost of Cement for fixed end bed blocks of bowstring girder inclusive of cost of steel etc.	8..6.9	Cft.	287457 6906
c. 5600 Cft.	for R.C. Tee beams.	9.12.0	Cft.	54600
d. 2700 Cft.	For R.C.deck slab over Tee ribs.	7.2.0	Cft.	19238
e. 5020 Cft.	For cross beam in bowstring girder span.	13.14.3	Cft.	69731 437932
f. 5110 Cft.	For tee beams.	18.8.6	Cft.	94695
g. 1100 Cft.	For hangers.	23.6.6	Cft.	25747
h. 620 Cft.	For wind bracings.	8.6.6	Cft.	5212
i.8470 Cft.	For deck slab over bowstring girders.	6.15.3	Cft.	58893
j. 930 Cft.	For hand rails.	13.10.3	Cft.	12686
6315 Cft.	Reinforced Cement concrete 1:1½;3 mix with 3/4" size hard granite chips including cost of Cement, steel, Centering charges etc complete for arches.	10.3.9	Cft.	635165 64630
13. 2750 Cft.	Cement Concrete 1:1½:3 with 66 2/3% of 1" size chips and 33 1/3% of 3/4" to 1/2" size chips including cost of Cement and labour charges for laying wearing coat.	292.8.0	100 Cft.	8044
14 L.S.	Forming approach roads on either side providing revetments etc.			101000 808839
15.3.5 Tons.	a) Mild steel wrought and put up for well curbs.	877.8.0	Ton.	3071
5 Tons.	b. for bond rods, plates etc in well steining.	575.4.0	Ton.	2876
8 Nos.	16. Providing and fixing roller bearings.	L.S.	Cost...27000 Fixing charges.. 780 Grease boxes for rollers 1900	+
17. L.S.	Land acquisition and alienation.			19000 863266
18. 150 Rft.	Supply and fixing up of copper plate expansion joints icluding bitumen cum sand, bitumen coating between deckslab and wearing coat.	L.S.	150 Rft. 375 Coating. 367	864008

1.	2	3.	4.	5.
L(.				864,008
19. 12.	Supply and fixing of sliding plate bearings as per standard plan.	197.8.0	each.	2370
20. L.S.	Store rent.			150
21.a.	Photographic charges,testing welding rods, providing name plates, providing wooden hand rails etc.		L.S.	1415
21.b. L.S.	Claim by the contractor due to monsoon setting for protecting wells under Pier No.3 and 4		L.S.	1703
22.L.S.	Unforseen charges.			2154
23. L.S.	Contingencies and petty supervision charges.			4200
		876900		8.76lakhs

RUPEES EIGHT LAKHS AND SEVENTY SIX THOUSANDS ONLY. (Rs.8.76 lakhs only).

K.K.Nambiar,
Chief Engineer (Highways).

(TRUE COPY)

C-N. Ramchandra Rao 18.5.87

TECHNICAL ASSISTANT TO THE
CHIEF ENGINEER(HIGHWAYS).

DETAILED ESTIMATE.

CONSTRUCTING A BRIDGE OVER GURPUR RIVER AT MILE 4/7-8 OF MANGALORE BAINDUR COAST ROAD.

Details of work. (1)	Number. (2)	Measurement in feet. Length. (3)	Breadth. (4)	Depth. (5)	Area or Contents (6)
1.(a) Earthwork excavation for foundations of the pier, abutment in all soils including rock requiring blasting above water level including all leads and lifts.			as per actuals.		5575 or 5600 Cft.
(b) Earthwork excavation for foundation in all soils excluding rock requiring blasting below water level including shoring, strutting baling out water, all leads and lifts etc. complete.			as per actuals.		3116 Cft or 3200 Cft.
2. Reinforced Cement Concrete 1:2:4 with 3/4" size hard broken granite chips including cost of Cement, slab, centering charges, baling out water etc., complete for curbs.					
Piers 1 to 5 Trapezoidal portion.	5x3	33.5	(2'-0" plus 0'-4½")/2	2'-8"	1563
Rectangular portion.	5 x 3	31.43	2.0	0'-6"	472
Pier 6 and under abutment Trapezoidal portion.	2 x 3	25.50	(2'-0" plus 0'-4")/2	2'-8"	476
Rectangular portion.	2 x 3	23.43	2'-0"	0'-6"	140
					2651 or 2700 Cft.
3.(a) Sinking R.C.C.Rectangular wells in all soils including forming islands, baling out water etc. for pier wells (9' x 12' external diameter).					
Pier No.1. 93.58-60.00	3			33.58	100.74
Pier No.2. 93.58-72.10	3			21.48	64.44
Pier No.3. Eastern and western well. 93.58-51.70	2			41.88	83.76
..do. Middle well.93.58.50.90	1			42.68	42.68
Pier No.4.Eastern well. 93.58-50.90	1			41.68	41.68
Centre and western well. 93.58-51.90	2			42.68	85.36
Pier No.5 93.58- 66.00	3			27.58	82.74
					501.40 or 502 Rft.
(b) For Pier No. 6 and abutment.					
Baindur Abutment.93.58-70.00	3			23.58	70.74
Pier No.6. 93.58-70.00	3			23.58	70.74
					141.48 or 142 Rft.
(4) Cement concrete 1:3:6 mix with 1½" size hard broken granite metal including cost of Cement form works, baling out water etc. complete for well steining.					
Pier No.1. 3 wells.89.58-63.50	3	31.43	2'-0"	26.08	4918
Pier No.2. 3 wells 89.58-75.60	3	31.43	2'-0"	13.98	2636
Pier No.3. 2 Wells 90.40-55.20	2	31.43	2'-0"	35.20	4425
Pier No.3. 1 Well 90.40-54.40	2	31.43	2'-0"	36.00	2263
Pier No.4. 1 well 90.40-55.40	1	31.43	2'-0"	35.00	2200
2 wells 90.40-54.40	2	31.43	2'-0"	36.00	4526
Pier No.5. 3 wells 89.58 to 69.50	3	31.43	2'-0"	20.08	3787
Pier No.6. 3 wells 89.58-73.50	3	33.43	2'-0"	16.08	2261
Baindur abutment. 92.00 to 73.50	3	23.43	2'-0"	18.50	2601
					29617 or 29700 Cft.

1.	2.	3.	4.	5.	6.
5. Cement concrete 1:2:4 mix with 1½" size hard broken granite metal including cost of Cement for bottom plugging of wells.					
Pier No. 1 to 5.					
Rectangular portion.	5 x 3	8'-0"	5'-0"	1'-0"	600
Trapazoidal portion.	5 x 3	(8 plus 12)/2	(5 plus 9)/2	3'-0"	3150
Pier No. 6 and abutment.					
Rectangular portion.	2 x 3	5'-0"	4'-0"	1'-0"	120
Trapezoidal portion.	2 x 3	(5 plus 9)/2	(4 plus 8)/2	3'-0"	756
					4626 or 4650 Cft.
6. Filling with river sand in layer and ramming.					
Pier No.1.3 wells 64.00-87.58	3	8'-0"	5'-0"	23.58	2860
Pier No.2.3 wells 76.10-87.58	3	8'-0"	5'-0"	11.48	1378
Pier No.3.2 wells 55.70-88.40	2	8'-0"	5'-0"	32.7	2616
Pier No.3.1 Well 54.90-88.40	1	8'-0"	5'-0"	33.5	1340
Pier No.4.2 wells 54.9-88.4	2	8'-0"	5'-0"	33.5	2680
1 well 55.9 to 88.4	1	8'-0"	5'-0"	32.5	1300
Pier No.5.3 wells 87.58-70.00	3	8'-0"	5'-0"	17.58	2110
Pier No.6.3 wells 87.58-74.00	3	5'-0"	4'-0"	13.58	815
Baindur side abutment.90.0-74.0	3	5'-0"	4'-0"	16.0	960
					16059 or 16100 Cft.
7. Cement concrete 1:4:8 mix with 1½" size hard granite metal including cost of Cement, baling out charges etc for top plugging.					
Piers 1.5	5 x 3	8'-0"	5'-0"	2'-0"	1200
Pier No.6.	2 x 3	5'-0"	4'-0"	2'-0"	240
Cutwater copping over piers1-6	2 x 2 x 5 x 2 x 22/7 x 3 3/4				472
..do.. 2-3	1/2 x 2 x 2 x 4'-3" x 3'-9" x 2				64
..do.. 4-5	1/2 x 2 x 22/7 x 2.3/4 x 2.3/4 x 2				48
					2024 or 2050 Cft.
8. Reinforced Cement concrete 1:2:4 with 3/4" size hard granite metal including cost of Cement, steel, centering charges, baling out water etc. complete for capping slabs.					
Pier 1 to 5.	5	40'-6"	9'-0"	1'-3"	2278
Pier 6	1	31'-0"	8'-0"	1'-0"	248
Abutment.	1	28'-0"	9'-0"	1'-0"	252
					2778 or 2780Cft.
9. Cement Concrete 1:3:6 mix with 1½"size hard granite metal inclusive of cost of cement for foundation under abutment.	1	30'-0"	11'-0"	2'-0"	660 Cft.
10. Coursed rubble stone masonry Second sort in C.M. 1:5 inclusive of cost of cement, piers abutment on Mangalore side.					
86.00 to 90.00	1	28'-6"	9'-6"	4'-0"	1083
90.00 to 93.00	1	28'-0"	9'-0"	3'-0"	756
Pier abutments on both sides.					
93.00 to 109.78	1 x 2 x 27'6" x (5'-0" plus 8'-6")/2 x 16.78				6231
Backing 109.78 to 115.25	1 x 2 x 27'-6" x 2'-6" x 5.47				752
					8822
Deduct for bed block.	4 x 2 x 4'-8" x 2'-6" x 1'-6"				- 140
Deduct for Pedestal portion.	2 x 2 x 2'-6" x 2'-6" x 1'-6"				- 38
					8644 or 8700 Cft.

1.	2	3.	4.	5.	6.
10.(b) Coursed rubble stone Masonry I sort in C.M. 1:5 including cost of Cement Piers 1 2 and 5.					
90.83-98.00	3	32'-0"	8'-0"	7.17	5506
Cut waters.	2 x 3 x 1/2 x 22/7 x 4 x 4 x 7.17				1082
Pier No.3&4. 91.65.-98.00	2	32'-0"	8'-0"	6.35	3251
Cut waters.	2 x 2 x 1/2 x 22/7 x 4 x 4 x 6.35				638
Pier No.1 to 5 98.00-104.00	5 x 2	32'-0"	7'-6"	6.00	7200
Cut waters.	5 x 2 x 1/2 x 22/7 x 3.75 x 3.75 x 6.00				1326
Pier No.2,3,&4 104.00-108.88	3	32'-0"	7'-0"	4.88	3279
Cut waters.	3 x 3	1/2 x 22/7 x $(3\frac{1}{2})^2$ x 4.88			564
Pier No.4 104.00-108.15	1	32'-0"	7'-0"	4.15	~~930~~ 930
Cut water.	1 x 2 x 1/2 x 22/7 x $(3\frac{1}{2})^2$ x 4.15				160
Pier No.5. 104.00-108.15	1	32'-0"	7'-0"	4.15	930
Cut water.	1 x 2 x 1/2 x 22/7 x $(3\frac{1}{2})^2$ x 4.15				160
Pier No.6 90.58-96.00	1	23'-6"	7'-0"	5.42	891
Cut water.	1 x 2 x 1/2 x 22/7 $(3\frac{1}{2})^2$ x 5.42				209
96.00-103.00	1	23'-6"	6'-0"	7.00	987
Cut water.	1 x 2 x 1/2 x 22/7 x $(3\frac{1}{2})^2$ x 7.00				198
103.00 to 108.15	1	23'-6"	5'-0"	5.15	605
Cut water.	1 x 2 x 1/2 x 22/7 x $(2\frac{1}{2})^2$ x 5.15				101
For filling in between bed blocks.					583
					28600 Cft.
11. Reinforced Cement concrete 1:2:4with 3/4" size hard broken granite metal including cost of Cement, steel and centering charges etc.complete.					
a) Bed blocks under Tee ribs.					
Over pier abutments.	2 x 4	4'-8"	2'-6"	1'-6"	140
Pier 1 and 5	2 x 4	4'-8"	2'-6"	1'-6"	140
Pier 6.	1 x 4	4'-8"	5'-0"	1'-6"	140
					420 Cft.
(b1) Bed blocks under bowstring girder.					
Piers 2 and 4	2 x 2 x 2	6'-6"	3'-6"	2'-0"	364 or 365 Cft.
(b2) Reinforced Cement concrete 1:1:2 mix with 3/4" size hard granite broken metal inclusive of cost of Cement for fixed end bed blocks of bowstring girder inclusive of cost of slab etc.	2x2x2	~~2x2x2~~ 6'-6"	3'-6"	5'-0"	910
	2x2x2	2'-2"	3'-6"/2	0-2½"	6
					916
Deduct.	2x2x2	2'-2"	3'-6"	1'-8 1/3	111
					805 Cft.
(c) For R.C.Tee beams T.rib.					
50' spans.	3 x 4	55'-0"	1'-8"	4'-10"	5317
Fillets internal.	3x6x1/2	55'-0"	0'-6"	0'-6"	124
End fillets.	3x2x1/2	55'-0"	1'-1"	0'-6"	159
					5600 Cft.
(d) For R.C. decking over Tee ribs.					
	1 x 3	55'-0"	23'-6"	0'-7½"	2424
Kerbs.	2 x 3	55'-0"	0'-9"	0'-11"	228
					2652 or 2700 Cft.
(e) For cross girders in bowstring girder.					
4 spans.	4 x 12	23'-6"	1'-3"	3'-0"	4230
Extra for projection below Tee	4 x 12 x 2 x 1'-8" x 1'-3" x 1'-1"				217
Haunches.	4 x 12 x 2 x 23'-6" x 0'-6" x 0'-6"				564
					5011 or 5020 Cft.
f) For tie beam.	4 x 2	107'-0"	1'-8"	3'-8"	5213
Deduct for panelling.	4 x 2 x 9 x 8.16 x 0'-10" x 1'-8"				816
					4415
Add for widening ends.	2 x 4 x 2 x 2 x 3'-6" x 4'-11" x 0'-8"				368
	2 x 4 x 2 x 2 x 1'-2" x 3'-0" x 0'-8"				~~94~~ 74
	2 x 4 x 2 x 2 x 1'-1"/2 x 3'-0" x 0'-8"				34
Curved portion.	4 x 2 x 1'-8" x 3'-6" x 0'-8½"				35
Projection (2'-3")	4 x 2	3'-6"	1'-8"	2'-3"	113
Projection (1'-3")	4 x 2	3'-6"	1'-8"	1'-3"	63
					5102 or 5110 Cft.

1.	2.	3.	4.	5.	6.
(g) Hangers.					
Hanger A.	4 x 2 x 2			16964	
Hanger B.	4 x 2 x 2			15455	
Hanger C.	4 x 2 x 2			12.571	
Hanger D.	4 x 2 x 2			8.32	
Hanger E.	4 x 2 x 2			2.599	
				55.90	
	= 4 x 2 x 2 x 5590 x 0'-11" x 1'-4"				1094 or 1100 Cft.
h) For wind bracings.	4 x 4	23'-6"	0'-11"	1'-9"	609
For widening ends.	4x~~x~~2	0'-11"	0'-6"	0'-6"/2	4
					613 or 620 Cft.
I) For deck slab over bowstring girder.					
Two end spans.	2	108'-0"	23'-6"	0'-9"	3807
Intermediate span.	2	107'-0"	23'-6"	0'-9"	3772
Kerbs.	2	430'-0"	0'-9"	1'-0"	645
Pylons	4	2'-6"	1'-8"	12'-0"	250
..do..	4	2'-2"	3'-0"	1'-6"	39
					8463 or 8470 Cft.
12. Reinforced Cement concrete 1:1½:3 mix with 3/4" size hard granite metal including cost of Cement, steel, centering charges etc. complete for arches.	4 x 2	113.662	1'-8"	4'-2"	6315 Cft.
13. Cement concrete 1:1½:3 with 66 2/3% of 1" size chips and 33 1/3% of 3/4" to 1/2" size chips including cost of Cement and labour charges for laying wearing coat.	1	600'-0"	22'-0"	0'-2½"	2750 Cft.
14. Forming approach roads on either side providing revetment etc.		Vide sub estimate.			
15. a) Mild steel wrought and put up for well curbs.					
Pier 1 to 5.	3 x 5	38'-0"	9.72		7290 lbs or
Piers and abutments.	2 x 3	30'-0"	9.72		3.5 Tons.
(b) Bond rods, plates etc in well steining.					
Pier 1.Vertical rods.3/4" dia.	3 x 8	35'-6" x 1.51 lbs.			1287
Horizontal 1/2" dia.	2 x 8	36'-0" x 0.67 lbs.			386
	1 x 7	36'-0" x 0.67 lbs.			169
Pier No.2.Vertical rods 1/2" dia	3 x 16	15'-0" x 0.67 lbs.			82
Horizontal 1/2" diameter.	3 x 4	36'-0" x 0.67 lbs.			289
Pier No.3.Vertical 3/4" diameter	3 x 8	49'-6" x 1.51			1782
Horizontal rods 1/2" diameter.	3 x 1	36'-0" x 0.67			72
Pier No.4.Vertical rods 3/4"	3 x 8	44'-0" x 1.51			1584
Horizontal rods 1/2" diameter.	3 x 8	36'-0" x 0.67			576
Pier No.5.Vertical rod 3/4" dia.	3 x 8	25'-6" x 1.51 lbs.			918
Horizontal 1/2" diameter.	3 x 6	36'-0" x 0.67			432
Pier No.6. Vertical road 3/4"dia	3 x 8	24'-0" x 1.51 lbs.			864
Horizontal 1/2" diameter.	3 x 5 x	28'-0" x 0.67 lbs.			281
Pier abutment on Baindur side vertical 3/4" diameter.	3 x 8	23'-0" x 1.51 lbs.			828
Horizontal 1/2" diamter.	3 x 5	28'-0" x 0.67 lbs.			281
					10231 lbs or 4.57 tons or 5 Tons.
16. Providing and fixing roller bearings.					8 Nos.
17. Land acquisition and alienation.					L.S.

1.	2.	3.	4.	5.	6.
18. Supply and fixing up of copper plate expansion joints including bitumen cum sand, bitumen coating between deck slab and wearing coat.					L.S.
19. Supply of and fixing up sliding plate bearings.					12 Nos.
20. Store rent.					L.S.
21. (a) Photographic charges, testing welding rods, providing name plates, providing wooden hand rails etc.					L.S.
(b) Claim by the Contractor due to monsoon setting to protect wells under Pier No. 3 and 4.					L.S.
22. Unforeseen charges.					L.S.
23. Contingencies and petty supervision charges.					L.S.

ESTIMATE:ABSTRACT.

Name of Work: Approach road for constructing a bridge over Gurpur river at 4/7-8 of Mangalore Baindur Coast Road.

Quantity.	Description of work.	Rate.	Per.	Amount.
524000 Cft.	1.a. Earthwork excavation hard gravelly soil for forming approaches including initial lead and lift. S.S. 20A.	34.2.0	1000Cft.	17882
109000 Cft.	b. Earthwork excavation in sandy soil for forming approach in Baindur side with all leads andlifts.	73.2.0	1000 Cft.	7971
1185000 Cft.	2.a. Extra lead of 10 yards over initial lead	2.7.0	100 Cft.	2885
3201000 Cft.	b. Extra for every additional lift of 1 yard over the initial lift.	2.7.0	100 Cft.	7803
58500 Cft.	c. Conveyance of earth from Mangalore to Baindur side by means of boat.	58.8.0	100 Cft.	3423
10000 Cft.	d. Conveyance of earth from Mangalore to Baindur side by means of lorry.	46.14.0	100 Cft.	469
31600 Cft.	3.a. Rough stone dry packing for revetments, including cost and conveyance of stones etc.	58.8.0	100 Cft.	18486
6100 Cft.	b. Cement concrete 1:6:10 for revetment including cost and conveyance of Cement and stones.	58.8.0	100 Cft.	3569
10400 Cft.	4. Soling with 6" size cubes including 25% of hard metal 1½" to 3" size for filling up void and 20% of gravel for filling inclusive of watering and consolidation etc.complete.	56.15.0	100 Cft.	5922
8500 Cft.	5. Collection and supply of hard granite metal 1½" size I.R.C.including steining at site.	40.15.3	100 Cft.	3481
3400 Cft.	6. Collection and supply of good gravel including conveyance and stacking it at site.	14.10.0	100 Cft.	497
20400 Sft.	7. Spreading hard granite metal 1½" size to 5 " thick in two layers of 3" and 2" thick each, spreading gravel, watering and consolidation with power roller inclusive of all leads for water etc complete. Bottom 3" thick. hand roller. Top 2" thick. Power Roller.	9.0.0	100 Sft.	1836
L.S.	8. Contingencies.			776
				101000

Rupees One Lakh and one Thousand only (Rs. 1.01 lakhs).

K.K.Nambiar,
Chief Engineer (Highways),

(TRUE COPY) C.N. Ramachandra Rao 18-5-55

TECHNICAL ASSISTANT TO THE
CHIEF ENGINEER (HIGHWAYS).

DETAILED ESTIMATE:

SUB ESTIMATE: APPROACH ROAD

Details of work. (1)	Number. (2)	Measurement in Feet. Length. (3)	Breadth. (4)	Depth. (5)	Area or Contents. (6)
1.(a) Earthwork excavation in hard gravelly soil for forming approaches including initial lead and lift (S.S. 20A)			actuals.		524000 Cft.
(b) Earthwork excavation in sandy soil for forming approaches on Baindur side approach including all leads and lifts.			actuals.		109000 Cft.
2.(a) Extra lead of 10 yards over initial lead.			actuals.		1185000 Cft.
(b) Extra for every additional lift of 1 yard over the initial lift.			actuals.		3201000 Cft.
(c) Conveyance of earth from Mangalore to Baindur side by means of boat.			actuals.		58500 Cft.
(d) Conveyance of earth by means of lorry.			actuals.		10000 Cft
3. Soling with 6" size cube hard granite stones inclusive of cost and conveyance of soling stones 1½" to 3" size hard metal for wedging voids at 25 cft for every 100 Cft of soling stones, gravel at 20 Cft for 100 Cft of soling stones including watering and consolidation with power roller etc. complete.					
Mangalore side.	1	900'-0"	13'-0"	0'-6"	5850
Baindur side.	1	700'-0"	13'-0"	0'-6"	4550
					10400 Cft.
4. Collection and supply of hard granite metal 1½" size including stacking at site.					
	1	1660'-0"	12'-0"	0'-5"	8000
For widening.	1	93'-0"	12'-0"	0'-5"	465
					8465 or 8500 Cft.
5. Collection and supply of good gravel including conveyance and stacking at site.	1				
	1	1693'-0"	12'-0"	0'-2"	3386 or 3400 Cft.
6. Spreading hard granite metal 1½" size to 5" thickness in two layers of 3" and 2" thick each hand packing and spreading, watering and consolidation(Bottom layer 3" thick with hand roller and top layer 2"thick with power roller)			12'-0"		
	1	1600'-0"	~~1600'-0"~~		19200
	1	93'-0"	12'-0"		1116
					20316 or 20400 Sq.ft.

P.T.O.

1.	2.	3.	4.	5.	6.
7. Rough stone dry packing for revetment					
Baindur side.	1	50'-0"	1'-6"	9'-0"	675
	1	50'-0"	1'-6"	13'-0"	975
1	1	10'-0"	1'-6"	16'-0" ~~16'-0"~~	240
	1	30'-0"	1'-6"	18'.1½"	816
	1	155'-0"	1'-6"	21'.1½"	4912
	1	22'-0"	1'-6"	26'-6"	875
	1	34'-0"/2	1'-6"	32'-0"	816
	2 x 1	3'-3"	1'-6"	28'-0"	273
	1	21'-6"	1'-6"	20'-3"	~~693~~ 655
	1	21'-6"	5'-0"	0'-9"	81
	1	34'-0"/2	1'-6"	32'-0"	816
	1	22'-0"	1'-6"	26'-6"	875
	1	120'-0"	1'-6"	21'-6"	3870
	1	48'-0"	1'-6"	19'-6"	1404
	1	158'-0"	1'-6"	15'-0"	3555
	1	48'-0"	2'-0"	3'-0"	288
	1	772'-0"	2'-0"	3'-0"	4632
Mangalore side.	1	83'-0"	2'-0"	3'-0"	498
	1	28'-6"	1'-6"	13'-0"	556
	1	25'-0"	1'-6"	8'-6"	319
	1	29'-6"	1'-6"	9'-6"	420
					27549
Add for providing drainage.					4010
					31559 or 31600 Cft.
b) Providing Cement concrete mix 1:6:10 revetment including cost and conveyance of Cement.					
Mangalore side.	1	73'-3"	1'-6"	18'-6"	2033
	1	(84'-0" plus 29'-6½"/2)	1'-6"	19'-0"	1617
	1	28'-6"	1'-6"	20'-0"	855
	1	25'-0"/2	1'-6"	19'-0"	356
	1	240'-3"	2'-0"	3'- 0"	1442
					6303
Deduct stone.					200
					6103 or 6100 Cft.
8. Contingencies.					L.S.

COMPARATIVE STATEMENT SHOWING THE DIFFERENCES BETWEEN THE ORIGINAL AND RE

Name of

Sl. No. O.E.	No. R.E.	Details of work	As per original estimate		
			Quantity	Rate	Amoun
	(1)	(2)	(3)	(4)	(5)
1)	1 a)	Earthwork excavation for foundation of the pier, abutments in all soils including rock requiring blasting above water level including all leads and lifts.	L.S.		500-0
	b)	Earthwork excavation for foundation in all soils excluding rock requiring blasting below water level including shoring strutting baling out water, all leads and lifts complete.			
2)	2)	Reinforced cement concrete(1:2:4) with 3/4" size hard broken granite chips including cost of cement, steel, centering charges baling out water etc complete for curbs.	2700 Cft	3- 12-0	10125-
3)	3)	a)Sinking of R.C. rectangular wells in all soils including forming islands baling out water etc for pier wells(9' x 12' External diameter) piers 1to5)	475 Rft	92- 6-0	43878-
		b) -do- pier 6 and abutment (8'x9' external diameter)	120 Rft	60- 0-0	7200-
4)	4)	Cement concrete(1:3:6) mix with 1½" size hard broken granite metal including cost of cement form works, baling out water etc complete for well steining	31000 Cft	111- 0-0	34410-0
5)	5)	Cement concrete 1:2:4 mix with 1½" size hard broken metal including cost of cement for bottom plugging of wells.	4650 Cft	143- 0-0	6650.
6)	6)	Filling with river sand in layers including ramming	17000 Cft	10- 4-0	1743-

SED ESTIMATE.

ork:- Constructing a bridge over Gurpur river near kulur at mile 4/7-8 of Mangalore -Baindur Road.

As per revised estimate			Differences		Remarks.
Quantity	Rate	Amount	Increase	Decrease	
(6)	(7)	(8)	(9)	(10)	(11)
5600 Cft	39-0-0 per 100 Cft	218- 0-0	342- 0-0		Increase is due to higher tendered rates which includes baling out water also, unlike in original estimate.
3200 Cft	195-0-0 Per 1000 Cft	624- 0-0			
) 2700 Cft	5- 10-6 per Cft	15272-0-0	5147-0-0		Increase due to higher quoted rates which includes baling out water unlike in the original estimate.
0 502 Rft	136- 8-0	68523-0-0	24645-0-0		Increase in quantity is due to sinking of wells under pier No 2 & 3 beneath the estimated depth reckening from 4' high than the original estimate and cost increase is due to higher quoted rates.
142 Rft	87-12-0 per Rft	12461- 0-0	5261-0-0		Increase in quantity due to sinking more than the estimated depth. Cost increased is also due to higher quoted rates.
29700 Rft	245-11-0 Per 1000 Ft	72969- 0-0	38559-0-0		Under pier No.3&4, 6 & baindur abutment wells were sunk beyond the estimated depth and under pier No.2 wells have been stopped at a higher level hence the net result as per actuals is reduction in quantity. Due to higher quoted rates cost has increased.
4650 Cft	229- 2-0 Per 1000 Ft	10654- 0-0	4004- 0-0		Due to higher quoted rates cost has increased.
16100	19- 8-0 Per 1000 Ft	3140- 0-0	1397- 0-0		Explanation as per item(4)

1	2	3	4	5
7) 7)	Cement concrete 1:4:8 mix with 1½" size hard granite metal including cost of cement baling out charges etc for top & plugging of of ~~trolls~~ wells.	1500	95- 0-0	1425-0-0
8) 8)	Reinforced cement concrete (1:2:4) with 3/4" size hard granite chips including cost of cement steel, centering charges, baling out water etc., complete for capping slabs.	2780 Cft	4- 8-0	12510-0-0
9) 9)	Cement concrete(1:3:6) mix with 1½" size hard granite metal inclusive of cost of cement for foundation under abutment. filling gap of bow string girder of tee beam	1200 Cft	95- 0-0	1140-0-0
10) 10 a) a)	Coursed rubble stone Masonary 2nd sort in column 1:5 including cost of cement	8900 Cft	96- 0-0	8544-0-0
10b) 10	b) Coursed rubble stone Masonary Ist sort in C.M. 1:5 including cost of cement	29500 Cft	109- 8-0	32155-0-0
11) 11)	Reinforced cement concrete 1:2:4 with 3/4" size hard broken granite metal including cost of cement, steel, and centering charges etc. complete.			
a)	a) For blocks under Tee ribs	420	3-12-0	1575-0-0
b)	b) For bed blocks under Bow-l string girder	730	5-4- 0	3833-0-0
	b2)Reinforced cement concrete 1:1:2 mix with 3/4" size hard granite borken metal inclusive of cost of cement for fixed end bed blocks of bowstring girder inclusive of cost of steel etc			
c)	c) for R.C.C. tee beams	5600 Cft	7- 0-0	39200-0-0
d)	d) for R.C.C. deck slab over Tee ribs	2700	4- 8-0	12150-0-

6	7	8	9	10	11
2050	157-15-3 Per 100 c.ft	3238-0-0 ~~Per 100 c.ft~~	1813-0-0		Quantity of concrete required for ~~xxxxxxxxxx~~ cut water water topping also has been included hence the excess quantity. Increase in cost is also due to high tendered rates.
780 Cft	6-13-3 Per 100 c.ft	18982-0-0 ~~Per 100 c.ft~~	6472-0-0		Cost increase is due to higher quoted rates.
660 Cft	170-10-0 Per 100 c.ft	1126-0-0 ~~Per 100 c.ft~~	-	14-0-0	Reduction in quantity is due to not adopting the filling in C.C. between bowstring girder and tee beam. Hence savings of Rs. 14/-
700	185-4-0 Per 100 c.ft	16116-0-0 ~~Per 100 c.ft~~	7572-0-0		Reduction in quantity is due to actual requirement claculation. Increase in cost is due to higher quoted rates.
8600	204-12-0 per 100 Cft	58559-0-0 ~~Per 100 c.ft~~	26404-0-0		Reduction in quantity is due to laying of capping slab under pier No. 3&4 ~~xx~~ at a higher level. Increase in cost is due to higher quoted rates.
420	per Cft 5-15-0	2500-0-0	932-0-0		Increase in cost due to higher quoted rates.
365	8-6-~~66~~	3068-0-0	-	765-0-0	A new method followed. Hence reduction in quantity and hence savings.
820	8-6-9	6906-0-0	6906-0-0	-	N/dew design adopted. Hence the item is extra for fixed end bed blocks.
600 Cft	8-12-0	54600-0-0	15400-0-0	-	Increase in cost due to higher quoted rates.
700	7-2-0	19238-0-0	7088-0-0	-	-do- -do-

1	2	3	4	5
e) e)	For cross beam in bowstring grider span.	4400 Cft	18- 8-0	46200
f) f)	For tee beams	4500	13-12-0	61875
g) g)	For hanges	1100	17- 8-0	19250-0
h) h)	For wind bracings	700	6- 4-0	4375-0
i) i)	For deck slab over bowstring grider	8140	4- 8-0	36630-0
j) j)	For hand rails.	990	6-12-0	6683-0
12) 12)	Reinforced cement concrete 1:1½:3 with 3/4" size hard granite chips involving cost of cement, steel centering charge etc complete for arches.	6400	8- 0- 0	51200-0
13) 13)	Cement concrete 1:1½:3 with 66 2/3% 1" size chips and 33 1/3% of 3/4" to 1/2" chips including cost of cement and labour charges for laying wearing coat.	2800	193-0-0	5404-0
14) 14)	Forming approach roads on either side providing rivetments etc as per separate sub-estimate	-	-	60000-0
15) 15)	a)Mild steel wrought and put up for well ~~corps~~ cowbs b)for bond rods, plates etc in well steining.	112 ~~Cft~~ Cwt. or 5.6ton	560-0-0	3136-0-

6	7	8	9	10	11
0 5020 Cft	13-14-3	69731-0-0	23531- 0-0	-	Increase in quantity is due to insufficient ~~in~~ provision in extra quantity required for haunched etc. Increase in cost is also due to higher quoted rates.
0 5110	18- 8-6	94695-0-0	32820- 0-0	-	Increase in quantity due to insufficient provision in the original estimate towards widening in the ends etc. Cost increase is also due to higher quoted rates.
.0 1100	23- 6-6	25747-0-0	6497- 0-0	-	Cost increase is due to higher quoted rates.
.0 620	8- 6-6	5212-0-0	837- 0-0	-	Reduction in quantity is due to reduction in the breadth from 12" to 11". Increase in cost is due to higher quoted rates
.0 8470	6-15-3	58893-0-0	22263- 0-0	-	Increase in quantity is due to extending the deck slab by 1' and for providing pylons. Cost increase is due to higher quoted rate. ~~As per execut~~
0 930	13-10-3	12686-0-0	6003-0-0	-	As per execution 930 cft is found to ~~be~~ sufficent. Excess in cost is due to higher quoted rates.
0 6315	10- 3-9 Cft	64630-0-0	13430-0-0	--	As per actual execution 6315 cft is found to be sufficient. Increase in cost is due to higher quoted rates.
0 2750	292-8-0 per 100 Cft	8044- 0-0	2640- 0-0	-	Excess in cost is due to higher quoted rates.
0		101000-0-0	41000-0-0	-	Quantity of ~~expe~~ earthwork done is more. Quantity conveyed is also more added with higher tender rates cost has increased.
3.5 tons 5 tons	877-8-0 per ton 575-4-0 per ton	3071-0-0) 2876-0-0)	2811-0-0	-	Steel for horizontal circular reinforcement was not provided in the original estimate. Quantity has increased as the same has been provided cost has increased because of higher quoted rates also.

	1	2	3	4	5
16)	16)	Providing and fixing roller ~~bearings~~ bearings	L.S.		4000-0-
17)	17)	Land acquisition and	L.S.		3000-0-
18)	~~18)~~	Baling out water and providing cofferdams wherever necessary	L.S.		18000-0
19)	18)	Supply and fixing up of copper plate expansion joints including bitumen, cum sand, bitumin coating between deck slab and wearing coat.	L.S.		500-0-
	19)	Supply and fixing up of sliding bearings as per standard plan	~~xxx~~		
20)	20)	Construction of temporary sheds	L.S		8000-0-
21)	21)	Unforeseen charges, including fluctuation in rates and miscellaneous such as moulds for well steining			9709-0-
		a) Photographic charges, testing welded rods, providing name plates, providing wooden hand rails etc.			
		b) Loss incurred by the contractor due to Monsoon setting(claim by the co~~x~~actor to protect wells under pier No. 3 & 4)			
22)	22)	Contingencies and petty supervision charges			20000-
23)		Major supervision charges			15000-
					590000
		Deduct savings			
		Net excess. Add excess to the original estimate amount			286,00
		Amonnt of revised estimate			8,76,000

Rupees eight lakhs and seventy six thousands

6	7	8	9	10	11
Nos	(cost)	27000)			Including the actual cost of roller, the amount needed is more than the provision in the original estimate.
	~~fire jackets~~ fireJackets	780)	25480-0-0		
	greese boxes for rollers	1700)			
		19000-0-0	16000-0-0		Excess is due to actual cost of land acquisition.
				18000-0-0	This item given a savings of Rs. 18000/- since no separate provision made for baling out water in the revised estimate.
	150Rft (coating)	375-0-0) 367-0-0)	242-0-0	-	As per actuals 242/- is excess.
2 Nos	197-8-0	2370-0-0	2370-0-0		~~Since~~ No provision was made in the original estimate.
	(store rent)	150-0-0			Only a store room was needed for rent, other provisions not needed.
		2154-0-0		7555-0-0	On actual execution only ~~Rs. 2154~~ Rs was found necessary.
		1415-0-0))))) 1703-0-0)	3118-0-0		Before the wells were plugged monsoon came in and the contractor claimed extra for the repairs of the damaged islands on the grounds that he would have finished well sinking if the wells were stopped at estimated depth.
-0		4200-0-0	15800-0-0		On actual excavation the amount required was only Rs. 4200/-
-0			15000-0-0		This item is not to be charged to this work.
0-0		876000-0-0	350650-0-0 64650-0-0 286000-0-0	64650-0-0	
-0-0					
0-0		876000-0-0			

ly (Rs. ~~27,800~~ 8,76,000)/-

K.K.NAMBIAR,
Chief Engineer(Highways)

/True Copy/

C.N. Parameshwara Rao 18.5.56

TECHNICAL ASSISTANT TO THE
CHIEF ENGINEER(HIGHWAYS)

COMPARATIVE STATEMENT SHOWING THE DIFFERENCES BETWEEN THE ORIGINAL A
bridge over Gurpur river Kulur at mile 4/7-8 of Mangal

Serial No. O.E.	Serial No. R.E.	Details of work	As per original estimate Quantity	Rate	Amount
1	2	3	4		5
1	1 a)	Earthwork excavation hard gravelly soil for forming approaches including lead and lift S.S.20A	456000 Cft	19-4-0	8778-0-0
		b)Earth work excavation in sandy soil for forming approach in Baindur side with all leads and lifts.			
2a)	2	a)Extra lead of 10 yards over initial lead	760000 Cft	12- 4-0	931-0-0
2b)		b)Extra for every additional lift of 1 yard over the initial lift	470000 Cft	6- 2-0	288-0-0
2c)		c)Conveyance of earth from Mangalore to Baindur side by means of boat	394000 Cft	31-0-0	1214-0-0
d)		d)Conveyance of earth by from Mangalore to Baindur side by means of lorry			
3	3(a)	Rough stone dry packing for rivetment including cost and conveyance of stones etc	39200 Cft	35-8-0	13916-0-
	(b)	Cement concrete 1:6:10 for rivetment including cost and conveyance of cement and stones.			
4)	4)	Gravel backing 6" thick for rivetments including cost and conveyance of gravel.	10300 Cft	20-0-0	2060-0-

ISED SUB-ESTIMATE:- NAME OF WORK:- Approach road for constructing a ndur road.

t per revised estimate			Difference		
ntity	Rate	Amount	Increase	Decrease	Remarks
6	7	8	9	10	11
4000 Cft	34-2-0 per 1000 Cft	17882-0-0	9104-0-0	-	) Quantity provided in the original estimate was found to be sufficient during execution. Added with high tender rates cost has shot up.
000 Cft	73- 2-0 per 1000 Cft	7971-0-0	7971-0-0	-	)
85000 Cft	2- 7-0 per 100 Cft	28885-0-0	27954-0-0	-	-do-
320100 Cft	2- 7-0 per 100 Cft	7803-0-0	7515-0-0	-	-do-
58500 Cft	58-8-0 per 100 Cft	3423-0-0		8791-0-0	The quantity conveyed in the actual execution is less and hence savings. Instead for a small quantity lorry was utilised as shown in the item below.
1000 Cft	46-14-0 per 100 Cft	469-0-0	469-0-0		-do- -do-
1600 Cft	58-8-0	18486-0-0	4570-0-0		Quantity is less because C.C. mix was used for a portion as in the item below. Cost has river because of high bender rates.
00	58- 8-0	3569-0-0	3569-0-0		To speed up the execution of work contractor was allowed to do rivetment in C.C
			2060-0-0		Not utilised the provision Hence savings.

	1	2	3	4	5
5	5)	Soling with 6" size cubes including 25% of hard metal 2 1½" to 3" size for filling up void and 20% of gravel for filling, inclusive of water and consolidation etc complete	10400 Cft	42-0-0	4368-0
6)	6)	Collection and supply of hard granite metal 1½" size I.R.C. including stacking at site	8000	27-6-0	2190-0
7)	7)	Collection and supply of good gravel including conveyance and stacking it at site	8400 Cft	13-8-0	1134-0
8)	8)	Spreading hard granite metal 1½" size to 5" thick in two layers of 3" and 2" thick each, spreading gravel, watering and consolidation with power roller inclusive of all leads for water etc complete (Bottom 3" thick- hand roller) (Top 2" thick - power roller)	19200 Sft	4- 0-0	768-0
9)	(9	Providing guide posts wherever necessary in the embankment	L.S.		1500-0
10)	10)	Unforeseen charges and office contingencies for cutting rock etc	L.S.		11853
					60,000
		Excess			
		Total			41,000
					1 ,01,000

Amount of revised Sub estimate Rs. 1.01 lakhs) Rup

6	7	8	9	10	11
					Cost has risen because of higher quoted rates.
0	10400	56-15-0 for 100 Cft	5922-0-0	1554-0-0	-
					Because of widening the quantity has increased from 8000 Cft to 8500 cft. Added with ~~illegible~~ higher quoted rates, the cost has increased.
0	8500	40-15-3 for 100 Cft	3481-0-0	1291-0-0	~~illegible~~
0	3400 Cft	14-10-0 for 100 Cft	497-0-0	637-0-0	/ This provision was found sufficient during execution. Hence savings.
					Increase in quantity is due to widening in the approach Added with the tender % cost has risen.
0	20400 Sft	9- 0-0	1836-0-0	1068-0-0	-
0				1500-0-0	Not utilised.
					This provision is against any unforeseen charges--Not utilised.
		776- 0-0	-	11077-0-0	
0-0		101000-0-0	65065-0-0 24065-0-0	24065-0-0	
0-0			41000-0-0		
0-0					

es one lakh and one thousand only.

K.K.NAMBIAR,
Chief Engineer(Highways)

C.N. Raghavendra Rao 18.5.57

TECHNICAL ASSISTANT TO THE
CHIEF ENGINEER(HIGHWAYS)

REPORT TO ACCOMPANY THE REVISED ESTIMATE FOR RECONSTRUCTING A BRIDGE AT MILE 4/7-8 OF MANGALORE BANDUR COAST ROAD NEAR KULUR OVER GURPUR RIVER.

Original Estimate. 5.90 lakhs.
Revised Estimate: 8.76 lakhs.

The original estimate for the above work was sanctioned for Rs. 5.90 lakhs in Chief Engineer (Highways) estimate No. 37 of 1949-1950. The work has been completed and the revised estimate generally provides for quantities as per execution.

2. The excess amount of revised estimate over the original estimate is Rs. 2.86 lakhs. The excess is mainly due to higher quoted rates by the contractors. The tender premium works out to 55.36%. The excess on this account is Rs. 289000/-. In cases such as sinking of wells, earthwork for approach road etc., the quantities have exceeded the provision in the original estimate as actually required. Even in the superstructure, the quantity of R.C. work required for cross beams and the beams of the Bow string girders have increased since enough provisions were not made in the original estimate towards haunches and widening of the beams and the excess on this account is Rs. 17000/-. In the case of the cost of roller bearings and the cost of land acquisition, the provision in the original estimate was found to be insufficient. Provisions are now made in the revised estimate considering the actual cost and the excess due to this amounts to Rs. 43000/-. Other minor items such as sliding bearings, loss incurred by the Contractor towards the damage of the islands, photographic charges etc are provided and the excess on this account is Rs. 7215/-.

3. The various deviations made are the following:
(i) Wells under piers Nos. 3 and 4 were sunk beyond the estimated depth since the soils met with at estimated depth was found to be of low bearing capacity. The wells under pier No.2 have been stopped above the estimated depth as the soil met with was found to be very hard. The levels to which the wells are sunk are given below, comparing the same with the provisions in the original estimate.

Pier No.	Original Estimate.	Revised Estimate.
2.	50.00	72.10
3.	55.00	51.70
4.	60.00	50.90

The depth of sinking has been reckoned from R.L. 93.58 instead 89.53 as in original estimate.

ii) Circular reinforcements of 1/2" diameter have been provided to take up the hoop tension in the staining of wells.

iii) The top of the capping slabs are laid at a higher level in Piers No.3 and 4 i.e. at 91.65 instead at 90.63 since the water level was higher during execution.

b) Provision has been made for the fixed end bed blocks of the bowstring girders adopting a new design.

c) i) Filling in of concrete on pier No.2 in between the bowstring and the tee beam has been omitted and instead, the deck slab of the bowstring girder has been extended.

ii) The size of the wind traces has been changed to 11" x 21" from 12" x 21".

4. The volume of the earthwork required for the approaches has increased. Provision is also now made to revet the embankment in portions where they are higher than 6', in the approach road formation.

5. Provision is also made towards the construction of pylons in the four corners of the brid e to give attractive appearance.

The provision made in the original estimate towards baling out water, gravel backing, unforeseen charges, construction of temporary sheds have been deleted as these items are not required.

Major supervision charges provided inthe original estimate also have been deleted as the same is not required for this work.

R.K.Nambiar,
Chief Engineer (Highways).

(TRUE COPY).

C.N. Parameshwara Rao 18.5.57

TECHNICAL ASSISTANT TO THE
HELP ENGINEER (HIGHWAYS).

Gs.

ESTIMATE ABSTRACT:

CONSTRUCTING A BRIDGE OVER GURPUR RIVER AT MILE 4/7-8 OF MANGALORE BANTWAL COAST ROAD.

Quantity. (1)	Description of work. (2)	Rate. (3)	Per- (4)	Amount. (5).
1.a) 5600 Cft.	Earthwork excavation for foundations of the pier, abutment in all soils including rock requiring blasting above water level including all leads and lifts.	39.0.0	1000 Cft.	218
b) 3200 Cft.	Earthwork excavation for foundation in all soils excluding rock requiring blasting below water level including shoring strutting baling out water, all leads and lifts complete.	195.0.0	1000 Cft.	624
2. 2700 Cft.	Reinforced Cement concrete (1:2:4 with 3/4" size hard broken granite chips including cost of Cement, steel centering charges baling out water etc complete for curbs.	5.10.6	Cft.	15272
3.a. 502 Rft.	Sinking of R.C.C. Rectangular wells in all soils including forming islands, baling out water etc. for pier wells (9' x 12' external diameter)	136.8.0	1 Rft.	68523
b. 142 Rft.	Pier 6 and abutment (8' x 9') External diameter.	87.12.0	1 Rft.	12461
4. 29700 Cft.	Cement Concrete (1:3:6) mix with 1½" size hard broken granite metal including cost of Cement, form works, baling out water etc complete for well steining.	245.11.0	100 Cft.	72969
5. 4650 Cft.	Cement Concrete 1:2:4 mix with 1½" size hard broken granite metal including cost of cement for bottom plugging of wells.	229.2.0	100 Cft.	10654
6. 16100 Cft.	Filling with river sand in layers including ramming.	19.8.0	100 Cft.	3140
7. 2050 Cft.	Cement concrete 1:4:8 mix with 1½" size hard granite metal including cost of Cement, baling out charges etc for top plugging of wells.	157.15.3	100 Cft.	3238
8. 2780 Cft.	Reinforced Cement Concrete (1:2:4) with 3/4" hard granite chips including cost of Cement, steel, centering charges baling out water etc complete for capping slabs.	6.13.3	per Cft.	18982
9. 660 Cft.	Cement concrete (1:3:6) mix with 1½" size hard granite metal inclusive of cost of cement for foundation under abutment.	170.10.0	100 Cft.	1126
10.a. 8700 Cft.	Coursed rubble stone masonry 2nd sort in C.M. 1:5 including cost of Cement.	185.4.0	100 Cft.	16116
10.b.				

1.	2.	3.	4.	5.
10.b.28600 Cft.	Coursed rubble stone masonry I sort in C.M. 1:5 including cost of Cement.	204.12.0	100 Cft.	56559
11.	Reinforced Cement concrete 1:2:4 with 3/4" size hard broken granite metal including cost of cement, steel and centering charges etc. complete.			
a. 420 Cft.	for bed blocks under Tee ribs.	5.15.6	1 Cft.	2507
b. 365 Cft.	For bed blocks under Bowstring girder.	8.6.6	Cft.	3060
b2. 820 Cft.	Reinforced Cement concretel:1:2 mix with 3/4" size hard granite broken metal inclusive of cost of Cement for ximl fixed end bed blocks of bowstring girder inclusive of cost of steel etc.	8..6.9	Cft.	6906
c. 5600 Cft.	for R.C. T e beams.	9.12.0	Cft.	54600
d. 2700 Cft.	For R.C.deck slab over Tee ribs.	7.2.0	Cft.	19230
e. 5020 Cft.	For cross beam in bowstring girder span.	13.14.3	Cft.	69731
f. 5110 Cft.	For tee beams.	15.8.6	Cft.	94695
g. 1100 Cft.	For hangers.	23.6.6	Cft.	25747
h. 620 Cft.	For wind bracings.	8.6.6	Cft.	5212
i.8470 Cft.	For deck slab over bowstring girders.	6.15.3	Cft.	53093
j. 930 Cft.	For hand rails.	13.10.3	Cft.	12686
6315 Cft.	Reinforced Cement concrete 1:1½:3 mix with 3/4" size hard granite chips including cost of Cement, steel, Centering charges etc complete for arches.	10.3.9	Cft.	64630
13. 2750 Cft.	Cement Concrete 1:1½:3 with 66 2/3% of 1" size chips and 33 1/3% of 3/4" to 1/2" size chips including cost of Cement and labour charges for laying wearing coat.	292.8.0	100 Cft.	8044
14 L.S.	Forming approach roads on either side providing revetments etc.			101000
15.3.5 Tons.	a) ild steel wrought and put up for well curbs.	877.8.0	Ton.	3071
5 Tons.	b. for band rods, plates etc in well steining.	575.4.0	Ton.	2876
8 Nos.	16. Providing and fixing roller bearings.	.8.	Cost...27000 Fixing charges.. 780 Grease boxes for rollers 1700/	
17. L.S.	Land acquisition and alienation.			19000
1'. 150 Rft.	Supply and fixing up of co per plate expansion joints icluding bitumen cum sand, bitumen coating between deckslab and wearing coat.	L.J.	150 Rft. Coating.	375 367

1.	2	3.	4.	5.
19. 12.	Supply and fixing of aliding plate bearings as per standard plan.	197.3.0	each.	2370
20. L.S.	Store rent.			150
21.a.	Photographic charges, testing welding rods, providing name plates, providing wooden hand rails etc.		L.S.	1415
21.b. L.S.	Claim by the contractor due to monsoon setting for protecting walls under ier No.3 and 4		L.S.	1703
22.L.S.	Unforseen charges.			2154
23. L.S.	Contingencies and petty supervision charges.			4200
				8.76lakhs

RUPEES EIGHT LAKHS AND SEVENTY SIX THOUSANDS ONLY. (Rs.8.76 lakhs only).

K.K.Nambiar,
Chief Engineer (Highways).

(TRUE COPY)

L. N. Raghuveer Rao 18-5-57

TECHNICAL ASSISTANT TO THE
CHIEF ENGINEER(HIGHWAYS).

DETAILED ESTIMATE.

CONSTRUCTING A BRIDGE OVER CURTUR RIVER AT MILE 4/7-8 OF HANGALORE BAINDUR COAST ROAD.

Details of work. (1)	Number. (2)	Measurement in feet. Length. (3)	Breadth. (4)	Depth. (5)	Area or Contents (6)
1.(a) Earthwork excavation for foundations of the pier, abutment in all soils including rock requiring blasting above water level including all leads and lifts.			as per actuals.		5575 or 5600 Cft.
(b) Earthwork excavation for foundation in all soils excluding rock requiring blasting below water level including shoring, strutting baling out water, all leads and lifts etc. complete.			as per actuals.		3116 Cft or 3200 Cft
2. Reinforced Cement Concrete 1.2:4 with 3/4" size hard broken granite chips including cost of Cement, slab, centering charges, baling out water etc., complete for curbs.					
Piers 1 to 5 Trapezoidal portion.	5x3	33.5	(2'-0" plus 0'-4")/2	2'-8"	1563
Rectangular portion.	5 x 3	31.43	2.0	0'-6"	472
Pier 6 and under abutment Trapezoidal portion.	2 x 3	25.50	(2'-0" plus 0'-4")/2	2'-8"	476
Rectangular portion.	2 x 3	23.43	2'-0"	0'-6"	140
					2651 or 2700 Cft
3.(a) Sinking R.C.C.Rectangular wells in all soils including forming islands, baling out water etc. for pier wells (9' x 12' external diameter).					
Pier No.1. 93.58-60.00	3			33.58	100.74
Pier No.2. 93.58-72.10	3			21.48	64.44
Pier No.3. Eastern and western well. 93.58-51.70	2			41.88	83.76
..do. Middle well.93.58.50.90	1			42.68	42.68
Pier No.4.Eastern well. 93.58-50.90	1			41.68	41.68
Centre and western well. 93.58-51.90	2			42.68	85.36
Pier No.5 93.58- 66.00	3			27.58	82.74
					501.40 502 Rft
(b) For Pier No. 6 and abutment.					
Baindur Abutment.93.58-70.00	3			23.58	70.74
Pier No.6. 93.58-70.00	3			23.58	70.74
					141.48 or 142 Rft.
(4) Cement concrete 1:3:6 mix with 1½" size hard broken granite metal including cost of Cement form works, baling out water etc. complete for well staining.					
Pier No.1. 3 wells.89.58-63.50	3	31.43	2'-0"	26.08	4918
Pier No.2. 3 wells 89.58-75.60	3	31.43	2'-0"	13.98	2636
Pier No.3. 2 Wells 90.40-55.20	2	31.43	2'-0"	35.20	4425
Pier No.3. 1 well 90.40-54.40	2	31.43	2'-0"	36.00	2263
Pier No.4. 1 well 90.40-55.40	1	31.43	2'-0"	35.00	2200
2 wells 90.40-54.40	2	31.43	2'-0"	36.00	4526
Pier No.5. 3 wells 89.58 to 69.50	3	31.43	2'-0"	20.08	3787
Pier No.6. 3 wells 89.58-73.50	3	23.43	2'-0"	16.08	2261
Baindur abutment. 92.00 to 73.50	3	23.43	2'-0"	18.50	2601
					29617 or 29700 Cft

1.	2.	3.	4.	5.	6.
5. Cement concrete 1:2:4 mix with 1½" size hard broken granite metal including cost of Cement for bottom plugging of wells.					
Pier No. 1 to 5.					
Rectangular portion.	5 x 3	8'-0"	5'-0"	1'-0"	600
Trapezoidal portion.	5 x 3	(8 plus 5)/2	(5 plus 9)/2	3'-0"	3150
Pier No. 6 and abutment.					
Rectangular portion.	2 x 3	5'-0"	4'-0"	1'-0"	120
Trapezoidal portion.	2 x 3	(5 plus 9)/2	(4 plus 8)/2	3'-0"	756
					4626 or 4650 Cft.
6. Filling with river sand in layer and ramming.					
Pier No.1.3 wells 64.00-87.58	3	8'-0"	5'-0"	23.58	2860
Pier No.2.3 wells 76.10-87.58	3	8'-0"	5'-0"	11.48	1378
Pier No.3.2 wells 55.70-88.40	2	8'-0"	5'-0"	32.7	2616
Pier No.3.1 Well 54.90-88.40	1	8'-0"	5'-0"	33.5	1340
Pier No.4.2 wells 54.9-88.4	2	8'-0"	5'-0"	33.5	2680
1 well 55.9 to 88.4	1	8'-0"	5'-0"	32.5	1300
Pier No.5.3 wells 87.58-70.00	3	8'-0"	5'-0"	17.58	2110
Pier No.6.3 wells 87.58-74.00	3	5'-0"	4'-0"	13.58	815
Maindur side abutment 90.0-74.0	3	5'-0"	4'-0"	16.0	960
					16059 or 16100 Cft.
7. Cement concrete 1:4:8 mix with 1½" size hard granite metal including cost of Cement, baling out charges etc for top plugging.					
Pier No.5	5 x 3	8'-0"	5'-0"	2'-0"	1200
Pier No.6.	2 x 3	5'-0"	4'-0"	2'-0"	240
Cut water copping over piers 1-6	2 x 2 x 5 x 2 x 22/7 x 3 3/4				472
..do.. 2-3	1/2 x 2 x 2 x 4'-3" x 3'-9" x 2				64
..do.. 4-5	1/2 x 2 x 22/7 x 2 3/4 x 2 3/4 x 2				48
					2024 or 2050 Cft.
8. Reinforced Cement concrete 1:2:4 with 3/4" size hard granite metal including cost of Cement, steel, centering charges, baling out water etc. complete for capping slabs.					
Pier 1 to 5.	5	40'-6"	9'-0"	1'-3"	2278
Pier 6	1	31'-0"	8'-0"	1'-0"	248
Abutment.	1	26'-0"	9'-0"	1'-0"	222
					2778 or 2790Cft.
9. Cement Concrete 1:3:6 mix with 1½"size hard granite metal inclusive of cost of cement for foundation under abutment.	1	30'-0"	11'-0"	2'-0"	660 Cft.
10. Coursed rubble stone masonry Second sort in C. M. 1:5 inclusive of cost of cement, piers abutment on Mangalore side.					
86.00 to 90.00	1	22'-6"	9'-0"	4'-0"	1080
90.0 to 93.00	1	23'-0"	9'-0"	3'-0"	756
Pier abutments on both sides.					
93.00 to 109.78	1 x 2 x 27'6" x (5'-0" plus 8'-6")/2 x 16.78				6231
Backing 109.78 to 115.25	1 x 2 x 27'-6" x 2'-6" x 5.47				752
					8822
Deduct for ted block.	4 x 2 x 4'-3" x 2'-6" x 1'-6"				- 140
Deduct for Pedestal portion.	2 x 2 x 2'-6" x 2'-6" x 1'-6"				- 38
					8644 or 8700 Cft.

1.	2	3.	4.	5.	6.
10.(b) Coursed rubble stone Masonry I sort in C.M. 1:5 including cost of Cement Piers 1 2 and 5.					
90.83-98.00	3	32'-0"	8'-0"	7.17	5506
Cut waters.	2 x 3 x 1/2 x 22/7 x 4 x 4 x 7.17				1082
Pier No.3&4. 91.65.-98.00	2	32'-0"	8'-0"	6.35	3251
Cut waters.	2 x 2 x 1/2 x 22/7 x 4 x 4 x 6.35				638
Pier No.1 to 5 98.00-104.00	5 x 2	32'-0"	7'-6"	6.00	7200
Cut waters.	5 x 2 x 1/2 x 22/7 x 3.75 x 3.75 x 6.00				1326
Pier No.2,3,&4 104.00-108.88	3	32'-0"	7'-0"	4.88	3279
Cut waters.	3 x 3	1/2 x 22/7 x $(3\frac{1}{2})^2$ x 4.88			564
Pier No.4 104.00-108.15	1	32'-0"	7'-0"	4.15	~~990~~ 930
Cut water.	1 x 2 x 1/2 x 22/7 x $(3\frac{1}{2})^2$ x 4.15				160
Pier No.5. 104.00-108.15	1	32'-0"	7'-0"	4.15	930
Cut water.	1 x 2 x 1/2 x 22/7 x $(3\frac{1}{2})^2$ x 4.15				160
Pier No.6 90.58-96.00	1	23'-6"	7'-0"	5.42	891
Cut water.	1 x 2 x 1/2 x 22/7 $(3\frac{1}{2})^2$ x 5.42				209
96.00-103.00	1	23'-6"	6'-0"	7.00	987
Cut water.	1 x 2 x 1/2 x 22/7 x $(3\frac{1}{2})^2$ x 7.00				198
103.00 to 108.15	1	23'-6"	5'-0"	5.15	605
Cut water.	1 x 2 x 1/2 x 22/7 x $(2\frac{1}{2})^2$ x 5.15				101
For filling in between bed blocks.					583
					28600 Cft.
11. Reinforced Cement concrete 1:2:4 with 3/4" size hard broken granite metal including cost of Cement, steel and centering charges etc.complete.					
a) Bed blocks under Tee ribs.					
Over pier abutments.	2 x 4	4'-8"	2'-6"	1'-6"	140
Pier 1 and 5	2 x 4	4'-8"	2'-6"	1'-6"	140
Pier 6.	1 x 4	4'-8"	5'-0"	1'-6"	140
					420 Cft.
(b1) Bed blocks under bowstring girder.					
Piers 2 and 4	2 x 2 x 2	6'-6"	3'-6"	2'-0"	364 or 365 Cft.
(b2) Reinforced Cement concrete 1:1:2 mix with 3/4" size hard granite broken metal inclusive of cost of Cement for fixed end bed blocks of bowstring girder inclusive of cost of slab etc.	2x2x2	~~6'-6"~~ 6'-6"	3'-6"	5'-0"	910
	2x2x2	2'-2"	3'-6"/2	0-2½"	6
					916
Deduct.	2x2x2	2'-2"	3'-6"	1'-8 1/3	111
					805 Cft.
(c) For R.C.Tee beams T.rib.					
50' spans.	3 x 4	55'-0"	1'-8"	4'-10"	5317
Fillets internal.	3x6x1/2	55'-0"	0'-6"	0'-6"	124
End fillets.	3x2x1/2	55'-0"	1'-11"	0'-6"	159
					5600 Cft.
(d) For R.C. decking over Tee ribs.					
	1 x 3	55'-0"	23'-6"	0'-7½"	2424
Kerbs.	2 x 3	55'-0"	0'-9"	0'-11"	228
					2652 or 2700 Cft.
(e) For cross girders in bowstring girder.					
4 spans.	4 x 12	23'-6"	1'-3"	3'-0"	4230
Extra for projection below Tee	4 x 12 x 2 x 1'-8" x 1'-3" x 1'-1"				217
Haunches.	4 x 12 x 2 x 23'-6" x 0'-6" x 0'-6"				564
					5011 or 5020 Cft.
f) For tie beam.	4 x 2	107'-0"	1'-8"	3'-8"	5213
Deduct for Panelling.	4 x 2 x 9 x 8.16 x 0'-10" x 1'-8"				816
					4415
Add for widening ends.	2 x 4 x 2 x 2 x 3'-6" x 4'-11" x 0'-8"				368
	2 x 4 x 2 x 2 x 1'-2" x 3'-0" x 0'-8"				374
	2 x 4 x 2 x 2 x 1'-1"/2 x 3'-0" x 0'-8"				34
Curved portion.	4 x 2 x 1'-8" x 3'-6" x 0'-8½"				35
Projection (2'-3")	4 x 2	3'-6"	1'-8"	2'-3"	113
Projection (1'-3")	4 x 2	3'-6"	1'-8"	1'-3"	63
					5102 or

1.	2.	3.	4.	5.	6.
(g) Hangers.					
Hanger A.	4 x 2 x 2			16964	
Hanger B.	4 x 2 x 2			15455	
Hanger C.	4 x 2 x 2			12.571	
Hanger D.	4 x 2 x 2			8.92	
Hanger E.	4 x 2 x 2			2.599	
				55.90	
	= 4 x 2 x 2 x 5590 x 0'-11" x 1'-4"				1094 or 1100 Cft.
h) For wind bracings.	4 x 4	23'-6"	0'-1"	1'-9"	609
For widening ends.	4x4x2	0'-11"	0'-6"	0'-6"/2	4
					613 or 620 Cft.
i) For deck slab over bowstring girder.					
Two end spans.	2	108'-0"	23'-6"	0'-9"	3807
Intermediate span.	2	107'-0"	23'-6"	0'-9"	3772
Kerbs.	2	430'-0"	0'-9"	1'-0"	645
Pylons	4	2'-6"	1'-8"	12'-0"	250
..do..	4	2'-2"	3'-0"	1'-6"	39
					8463 or 8470 Cft.
12. Reinforced Cement concrete 1:1½:3 mix with 3/4" size hard granite metal including cost of Cement, steel, centering charges etc. complete for arches.	4 x 2	113.662	1'-8"	4'-2"	6315 Cft.
13. Cement concrete 1:2½:3 with 66 2/3% of 1" size chips and 33 1/3% of 3/4" to 1/2" size chips including cost of Cement and labour charges for laying wearing coat.	1	600'-0"	22'-0"	0'-2½"	2750 Cft.
14. Forming approach roads on either side providing revetment etc.		Vide sub estimate.			
15. a) Mild steel wrought and put up for wall curbs.					
Pier 1 to 5.	3 x 5	38'-0"	9.72		7290 lbs or 3.5 Tons.
Piers and abutments.	2 x 3	30'-0"	9.72		
(b) Bond rods, plates etc in wall staining.					
Pier 1. Vertical rods. 3/4" dia.	3 x 8	35'-6" x 1.51 lbs.			1287
Horizontal 1/2" dia.	2 x 8	36'-0" x 0.67 lbs.			386
	1 x 7	36'-0" x 0.67 lbs.			169
Pier No.2. Vertical rods 1/2" dia	3 x 16	15'-0" x 0.67 lbs.			82
Horizontal 1/2" diameter.	3 x 4	36'-0" x 0.67 lbs.			289
Pier No.3. Vertical 3/4" diameter	3 x 8	49'-6" x 1.51			1782
Horizontal rods 1/2" diameter.	3 x 1	36'-0" x 0.67			72
Pier No.4. Vertical rods 3/4"	3 x 8	44'-0" x 1.51			1584
Horizontal rods 1/2" diameter.	3 x 8	36'-0" x 0.67			576
Pier No.5. Vertical rod 3/4" dia.	3 x 8	25'-6" x 1.51 lbs.			918
Horizontal 1/2" diameter.	3 x 6	36'-0" x 0.67			432
Pier No.6. Vertical road 3/4" dia	3 x 8	24'-0" x 1.51 lbs.			664
Horizontal 1/2" diameter.	3 x 5 x	28'-0" x 0.67 lbs.			281
Pier abutment on Baindur side vertical 3/4" diameter.	3 x 8	23'-0" x 1.51 lbs.			828
Horizontal 1/2" diameter.	3 x 5	28'-0" x 0.67 lbs.			281
					10231 lbs or 4.57 tons or 5 Tons.
16. Providing and fixing roller bearings.					8 Nos.
17. Land acquisition and alienation.					L.S.

1.	2.	3.	4.	5.	6.
18. Supply and fixing up of copper plate expansion joints including bitumen cum sand, bitumen coating between deck slab and wearing coat.				L.S.	
19. Supply of and fixing up sliding plate bearings.				12 Nos.	
20. Store rent.				L.S.	
21. (a) Photographic charges, testing welding rods, providing name plates, providing wooden hand rails etc.				L.S.	
(b) Claim by the Contractor due to monsoon setting to protect wells under Pier No. 3 and 4.				L.S.	
22. Unforeseen charges.				LS.	
23. Contingencies and petty supervision charges.				L.S.	

ESTIMATE:ABSTRACT.

Name of Work: Approach road for constructing a bridge over Gurpur river at 4/7-8 of Mangalore Baindur Coast Road.

Quantity.	Description of work.	Rate.	Per.	Amount.
524000 Cft.	1.a. Earthwork excavation hard gravelly soil for forming approaches including initial lead and lift. S.S. 201.	34.2.0	100 Cft.	17882
109000 Cft.	b. Earthwork excavation in sandy soil for forming approach in Baindur side with all leads andlifts.	73.2.0	1000 Cft.	7971
1185000 Cft.	2.a. Extra lead of 10 yards over initial lead	2.7.0	100 Cft.	2385
3201000 Cft.	b. Extra for every additional lift of 1 yard over the initial lift.	2.7.0	100 Cft.	7803
58500 Cft.	c. Conveyance of earth from Mangalore to Baindur side by means of boat.	58.8.0	100 Cft.	3423
10000 Cft.	d. Conveyance of earth from Mangalore to Baindur side by means of lorry.	46.14.0	100 Cft.	469
31600 Cft.	3.a. Rough stone dry packing for revetments, including cost and conveyance of stones etc.	58.8.0	100 Cft.	18486
6100 Cft.	b. Cement concrete 1:6:10 for revetment including cost and conveyance of Cement and stones.	58.8.0	100 Cft.	3569
10400 Cft.	4. Soling with 6" size cubes including 25% of hard metal 1½" to 3" size for fil ing up void and 20% of gravel for filling inclusive of watering and consolidation etc.complete.	56.15.0	100 Cft.	5922
8500 Cft.	5. Collection and supply of hard granite metal 1½" size 1.t.C.including steining at site.	40.15.3	100 Cft.	3481
3400 Cft.	6. Collection and supply of good gravel including conveyance and stacking it at site.	14.10.0	100 Cft.	497
20400 Sft.	7. Spreading hard granite metal 1½" size to 5" thick in two layers of 3" and 2" thick each, spreading gravel, watering and consolidation with power roller inclusive of all leads for water etc complete. Bottom 3" thick. hand roller. Top 2" thick. Power Roller.	9.0.0	100 Sft.	1836
L.S.	8. Contingencies.			776
				101000

Rupees One Lakh and one Thousand only (Rs. 1.01 Lakhs).

K...Nambiar,
Chief Engineer (Highways),

(TRUE COPY)

G. N. Parameshwara Rao 18.5.57

TECHNICAL ASSISTANT TO THE CHIEF ENGINEER (HIGHWAYS).

DATA AS LOT AT:

SUB ESTIMATE: APPROACH ROAD

Details of work. (1)	Number. (2)	Measurement in Feet. Length. (3)	Breadth. (4)	Depth. (5)	Area or Contents. (6)
1.(a) Earthwork excavation in hard gravelly soil for forming approaches including initial lead and lift (S.S. 20A)			actuals.		52/000 Cft.
(b) Earthwork excavation in sandy soil for forming approaches on Baindur side approach including all leads and lifts.			actuals.		109000 Cft.
2.(a) Extra lead of 10 yards over initial lead.			actuals.		1105000 Cft.
(b) Extra for every additional lift of 1 yard over the initial ~~kaik~~ lift.			actuals.		3201000 Cft.
(c) Conveyance of earth from Bangalore to Baindur side by means of boat.			actuals.		58500 Cft.
(d) Conveyance of earth by means of lorry.			actuals.		10000 Cft
3. Soling with 6" size cube hard granite stones inclusive of cost and conveyance of soling stones 1½" to 3" size hard metal for wedging voids at 25 cft for every 100 Cft of soling stones, gravel at 20 Cft for 100 Cft of soling stones including watering and consolidation with power roller etc. complete.					
Bangalore side.	1	900'-0"	13'-0"	0'-6"	5850
Baindur side.	1	700'-0"	13'-0"	0'-6"	4550
					10400 Cft.
4. Collection and supply of hard granite metal 1½" size including stacking at site.					
	1	1600'-0"	12'-0"	0'-5"	8000
For widening.	1	93'-0"	12'-0"	0'-5"	465
					8465 or 8500 Cft.
5. Collection and supply of good gravel including conveyance and stacking at site.					
	1	1693'-0"	12'-0"	0'-2"	3386 or 3400 Cft.
6. Spreading hard granite metal 1½" size to 5" thickness in two layers of 3" and 2" thick each hand stacking and spreading, watering and consolidation(bottom layer 3" thick with hand roller and top layer 2"thick with power roller)			12'-0"		
	1	1600'-0"	~~1600'-0"~~		19200
	1	93'-0"	12'-0"		1116
					20316 or 20400 Sq.ft.

T.O.

1.	2.	3.	4.	5.	6.
7. Rough stone dry packing for revetment					
Bajpur side.	1	50'-0"	1'-6"	9'-0"	675
	1	50'-0"	1'-6"	13'-0"	975
1	1	10'-0"	1'-6"	16'-0" 18'-0"	240
	1	30'-0"	1'-6"	18'.1½"	816
	1	155'-0"	1'-6"	21'.1½"	4912
	1	22'-0"	1'-6"	26'-6"	875
	1	34'-0"/2	1'-6"	32'-0"	816
	2 x 1	3'-3"	1'-6"	28'-0"	273
	1	21'-6"	1'-6"	20'-3"	~~693~~ 653
	1	21'-6"	5'-0"	0'-9"	81
	1	34'-0"/2	1'-6"	32'-0"	816
	1	22'-0"	1'-6"	26'-6"	875
	1	120'-0"	1'-6"	21'-6"	3870
	1	48'-0"	1'-6"	19'-6"	1404
	1	158'-0"	1'-6"	15'-0"	3555
	1	48'-0"	2'-0"	3'-0"	288
	1	772'-0"	2'-0	3'-0"	4632
Mangalore side.	1	83'-0"	2'-0"	3'-0"	498
	1	23'-6"	1'-6"	13'-0"	556
	1	25'-0"	1'-6"	8'-6"	319
	1	29'-6"	1'-6"	9'-6"	420
					27549
Add for providing drainage.					4010
					31559 or 31600 cft.
b) Providing Cement concrete mix 1:6:10 revetment including cost and conveyance of Cement.					
Mangalore side.	1	73'-3"	1'-6"	18'-6"	2033
	1	(84'-0" less 29'-6"/2)	1'-6"	19'-0"	1617
	1	23'-6"	1'-6"	20'-0"	355
	1	25'-0"/2	1'-6"	19'-0"	356
	1	240'-3"	2'-0"	3'-0"	1442
					6303
Deduct stone.					.00
					6103 or 6100 cft.
8. Contingencies.					L.S.

13/1/15

COMPARATIVE STATEMENT SHOWING THE DIFFERENCES BETWEEN THE ORIGINAL AND REVISED ESTIMATES

Name of

Sl. No. O.E.	No. R.E.	Details of work	As per original estimate Quantity	Rate	Amount
	(1)	(2)	(3)	(4)	(5)
1)	1 a)	Earthwork excavation for foundation of the pier, abutments in all soils including rock requiring blasting above water level including all leads and lifts.	L.S.		600-0-
	b)	Earthwork excavation for foundation in all soils excluding rock requiring blasting below water level including shoring strutting baling out water, all leads and lifts complete.			
2)	2)	Reinforced cement concrete(1:2:4) with 3/4" size hard broken granite chips including cost of cement, steel, centering charges baling out water etc complete for curbs.	2700 Cft	3- 12-0	10125-0
3)	3)	a)Sinking of R.C. rectangular wells in all soils including forming islands baling out water etc for pier wells(9' x 12' External diameter) piers 1to5)	675 Rft	92- 6-0	43678- 0
		b) -do- pier 6 and abutment (6'x9' external diameter)	120 Rft	60- 0-0	7200--0
4)	4)	Cement concrete(1:3:6) mix with 1½" size hard broken granite metal including cost of cement form works, baling out water etc complete for well staining	31000 Cft	111- 0-0	34410-0
5)	5)	Cement concrete 1:2:4 mix with 1½" size hard broken metal including cost of cement for bottom plugging of wells.	4650 Cft	143- 0-0	6650- 0
6)	6)	Filling with river sand in layers including ramming	17000 Cft	10- 4-0	1743- 0

) ESTIMATE.

:- Constructing a bri'ge over Gurpur river near kulur at mile 4/7-2 of Mangalore -Baindur Road.

As per revised estimate			Differences		Remarks.
ntity	Ra e	Amount	Increase	Decrease	
(6)	(7)	(8)	(9)	(10)	(11)
600 Cft	30-0-0 per 100 Cft	218- 0-0	342- 0-0		Increase is due to higher tendered rates which includes baling out water also, unlike in original estimate.
200 Cft	195-0-0 Per 1000 Cft	624- 0-0			
700 Cft	6- 10-6 per Cft	15272-0-0	5147-0-0		Increase due to higher quoted rates which includes baling out water unlike in the original estimate.
602 Rft	136- 8-0	68523-0-0	24645-0-0		Increase in quantity is due to sinking of wells under pier No 2 & 3 beneath the estimated depth reckoning from 4' h'gh than the origi al estimate and cost increase is due to higher quoted rates.
12 Rft	87-12-0 per Rft	12461- 0-0	5261-0-0		Increase in quantity due to sinking more than the estimated dorth. Cost increased is also due to higher quoted rates.
9700 Rft	2'8-11-0 per 100 c.ft	72969- 0-0	33569-0-0		Under pier No.3&4, 6 & baindur abutment wells were sunk beyond the estimated depth and under pier No.2 wells have been stopped at a higher level hence the net result as per actuals is reduction in quantity. Due to higher quoted rates cost has increased.
350 ft	229- 2-0 Per 100 ft	10654- 0-0	4004- 0-0		Due to higher quoted rates cost has increased.
0100	19- 8-0 Per 100 ft	3140- 0-0	1397- 0-0		Explanation as per item(4)

COMPARATIVE STATEMENT SHOWING THE DIFFERENCES BETWEEN THE ORIGINAL
bridge over Gurpur river Culvert at mile 4/7-8 of Bengal

Serial No. O.E.	R.E.	Details of work	As per original estimate Quantity	Rate	Amount
1		2	3	4	5
1	1 a)	Earthwork excavation hard gravelly soil for forming approaches including lead and lift S.S.201	456000 Cft	19-4-0	8778-0-0
		b) Earth work excavation in sandy soil for forming approach in Baindur side with all leads and lifts.			
2a)	2	a) Extra lead of 10 yards over initial lead	760000 Cft	12- 4-0	931-0-0
2b)		b) Extra for every additional lift of 20 1 yard over the initial lift	470000 Cft	6- 2-0	288-0-0
2c)		c) Conveyance of earth from Mangalore to Baindur side by means of boat	304000 Cft	31-0-0	1214-0-0
d)		d) Conveyance of earth by from Mangalore to Baindur side by means of lorry			
3	3(a)	Rough stone dry packing for rivetment including cost and conveyance of stones etc	30000 Cft	35-8-0	13916-0-0
		(b) Cement concrete 1:3:1 for rivetment including cost and conveyance of cement and stones.			
4)	4)	Gravel backing 6" thick for rivetments including cost and conveyance of gravel.	10000 Cft	20-0-0	2060-0-0

) REVISED SUB-TOTAL :- NAME OF WORK:- Approach road for constructing a pre-Kaindur road.

As per revised estimate			Difference		
Quantity	Rate	Amount	Increase	Decrease	Remarks
6	7	8	9	10	11
0 524000 Cft	34-2-0 per 100 Cft	17882-0-0	9104-0-0	-	) Quantity provided in the) original estimate was found) to be sufficient during.) execution. Added with high) tender rates cost has shot) up.)
109000 Cft	73-2-0 per 1000 Cft	7971-0-0	7971-0-0	-	
1125000 Cft	2-7-0 per 100 Cft	28885-0-0	27954-0-0	-	-do-
320100 Cft	2-7-0 per 100 Cft	7203-0-0	7515-0-0	-	-do-
58500 Cft	58-8-0 per 100 Cft	3423-0-0		8791-0-0	The quantity conveyed in the actual execution is less and hence savings. Instead for a small quantity lorry was utilised as shown in the item below.
1000 Cft	46-14-0 per 100 Cft	469-0-0	469-0-0		-do- -do-
31600 Cft	52-8-0	12456-0-0	4570-0-0		Quantity is less because C.C. mix was used for a portion as in the item below. Cost has river because of high tender rates.
6100	52-8-0	3569-0-0	3569-0-0		To speed up the execution of work contractor was allowed to do rivetment in C.C
			2060-0-0		Not utilised the provision Hence savings.

1	2	3	4	5
16) 16)	Providing and fixing roller bearings	L.S.		4000-0-0
17) 17)	Land acquisition etc	L.S.		3000-0-0
18) 18)	Baling out water and providing cofferdams wherever necessary	L.S.		12000-0-0
19) 18)	Supply and fixing up of copper plate expansion joints including bitumen, cum sand, bituminous coating between deck slab and wearing coat.	L.S.		500-0-0
19)	Supply and fixing up of sliding bearings as per drawing etc			
20) 20)	Construction of temporary sheds	L.S		8000-0-0
21) 21)	Unforeseen charges, including fluctuation in rates and miscellaneous such as moulds for wall staining			9709-0-0
	a) Photographic charges, testing welded rods, providing name plates, providing wooden hand rails etc.			
	b) Loss incurred by the contractor due to [illegible] setting(claim by the contract to protect wells under pier No. 3 A & C)			
22) 22)	Contingencies and petty supervision charges			20000-0
23)	Major supervision charges			15000-0
				590000-
	Deduct savings			
	Net excess.			
	All excess to the original estimate amount			286,000
	Amount of revised estimate			8,76,000-

Rupees eight lakhs and seventy six thousands o

7	8	9	10	11
los (cost) 27000) fuel chest 780) grease boxes 1700) for rollers		25480-0-0		Including the actual cost of roller, the amount needed is more than the provision in the original estimate.
	19000-0-0	16900-0-0		Excess is due to actual cost of land acquisition.
			18000-0-0	This item given a savings of Rs. 18000/- since no separate provision made for baling out water in the revised estimate.
160Rft (coating)	375-0-0) 367-0-0)	242-0-0		As per actuals 242/- is a excess.
12 Nos 197-8-0	2370-0-0	2370-0-0		No provision was made in the original estimate.
(store rent)	150-0-0			Only a store room was needed for rent, other provisions not needed.
	2154-0-0		7555-0-0	On actual execution only Rs. 2154 was found necessary.
	1415-0-0) 1703-0-0)	3118-0-0		Before the wells were plugged monsoon came in and the contractor claimed extra for the repairs of the damaged islands on the grounds that he would have finished well sinking if the wells were stopped at estimated depth.
	4200-0-0	15800-0-0		On actual excavation the amount required was only Rs. 4200/-
		15000-0-0		This item is not to be charged to this work.
	876000-0-0	350650-0-0 64650-0-0 280000-0-0	64650-0-0	
	876000-0-0			

ly (Rs. ~~87,032~~ 8,76,000)/-

K.K.NAMBIAR,
Chief Engineer(Highways)

/True Copy/

C.N. Raghuvira Rao 18.5.57

TECHNICAL ASSISTANT TO THE
CHIEF ENGINEER(HIGHWAYS)

1		2	3	4	5
e)	e)	For cross tegm in bowstring girder span.	4400 Cft	10- 8-0	46200-
f)	f)	For tie beams	4500	13-12-0	61875-
g)	g)	For hangers	1100	17- 8-0	19250-
h)	h)	For wind bracings	700	6- 4-0	4375-
i)	i)	For deck slab over bowstring grider	8140	4- 8-0	36630-
j)	j)	For hand rails.	990	6-12-0	6683-
12)	12)	Reinforced cement concrete 1:1½:3 with 3/4" size hard granite chips invelving cost of cement, steel centering charge etc complete for arches.	6400	8- 0- 0	51200-
13)	13)	Cement concrete 1:1½:3 in with 66 2/3% 1" size chips and 33 1/3% of 3/4" to 1/2" chips including cost of cement and labour charges for laying wearing coat.	2800	193-0-0	5404-
14)	14)	Forming approach roads on either side providing rivetments etc as per seperate sub-estimate	-	-	60000-
15)	15)	a)Mild steel wrought and put up for well ~~curb~~ curbs b)for bord rods, plates etc in well steining.	112 Cwt ~~Cft~~ or 5.6Ton	560-0-0	3136-0

6	7	8	9	10	11
-0	8020 cft	13-14-2	69701-0-0	23581- 0-0	-	Increase in quantity is due to insufficient provision in extra quantity required for hauling etc. Increase in cost is also due to higher quoted rates.
-0	6110	18- 0-6	94695-0-0	32280- 0-0	-	Increase in quantity due to insufficient provision in the original estimate towards widening in the ends etc. Cost increase is also due to higher quoted rates.
-0	1100	23- 0-6	28747-0-0	6497- 0-0	-	Cost increase is due to higher quoted rates.
-0	620	8- 6-6	8212-0-0	837- 0-0	-	Reduction in quantity is due to reduction in the breadth from 12" to 11". Increase in cost is due to higher quoted rates
-0	8470	6-15-3	89693-0-0	22263- 0-0	-	Increase in quantity is due to extending the dock slab by 1' and for providing pylons. Cost increase is due to higher quoted rate. As per account
-0	930	12-10-0	12873-0-0	6003-0-0	-	As per execution 930 cft is found to be sufficient. Excess in cost is due to higher quoted rates.
-0	6315	10- 3-0 cft	84630-0-0	13430-0-0	--	As per actual execution 6315 cft is found to be sufficient. Increase in cost is due to higher quoted rates.
-0	2750	892-8-0 per 100 cft	3044- 0-0	3640- 0-0	-	Excess in cost is due to higher quoted rates.
0			101000-0-0	41000-0-0	-	Quantity of extra earthwork done is more. Quantity conveyed is also more added with higher tender rates cost has increased.
	3.6 tons	877-0-0 per ton	3071-0-0)			Steel for horizontal circular reinforcement was not provided in the original estimate. Quantity has increased as the same has been provided cost has increased
	5 tons	576-4-0 per ton	2276-0-0)	2811-0-0	-	[illegible] as of higher quoted rates

1	2		3	4	5
7)	7)	Cement concrete 1:8 of mix with 1½" size hard granite metal including cost of cement baling out charges etc for top ⅔ plugging of of trolly wells	1530	05- 0-0	1427-0-0
8)	8)	Reinforced cement concrete (1:2:4) with 3/4" size hard granite chips including cost of cement steel, centering charges, baling out water etc., complete for capping slabs.	2720 Cft	4- 8-0	12510-0-0
9)	9)	Cement concrete(1:3:6) mix with 1½" size hard granite metal inclusive of cost of cement for foundation under abutment. filling gap of bow string girder & toe beam	1200 Cft	05- 0-0	1140-0-0
10) a)	10 a)	Coursed rubble stone Masonary 2nd sort in cement 1:8 including cost of cement	8200 Cft	06- 0-0	8544-0-0
10b)	10	b) Coursed rubble stone Masonary Ist sort in C.M. 1:6 including cost of cement	29800 Cft	108- 8-0	32165-0-0
11)	11)	Reinforced cement concrete 1:2:4 with 3/4" size hard broken granite metal including cost of cement, steel, and centering charges etc. complete.			
a)		a) For blocks under Tee ribs	450	3-12-0	1575-0-0
b)		b) For bed blocks under Bow-l string girder	730	5-4- 0	3803-0-0
		b2)Reinforced cement concrete 1:1:2 mix with 3/4" size hard granite broken metal inclusive of cost of cement for fixed end bed blocks of bowstring girder inclusive of cost of steel etc			
c)		c) for R.C.C. tee beams	5000 Cft	7- 0-0	38200-0-0
d)		d) for R.C.C. deck slab over Tee ribs	2700	4- 8-0	12150-0-0

6	7	8	9	10	11
050	157-10-3 Per 100 c.ft	3330-0-0	1818-0-0		Quantity of concrete required for ~~maximum~~ cut water water topping also has been included hence the excess quantity. Increase in cost is also due to high tendered rates.
780 Cft	6-13-3 Per 100 c.ft	12982-0-0	6472-0-0		Cost increase is due to higher quoted rates.
360 Cft	170-10-0 Per 100 c.ft	1120-0-0	-	14-0-0	Reduction in quantity is due to not adopting the filling in C.C. between boustring girder and tee beam. Hence savings of Rs. 14/-
700	185-4-0 Per 100 c.ft	16116-0-0	7572-0-0		Reduction in quantity is due to actual requirement claculation. Increase in cost is due to higher quoted rates.
3600	204-12-0 per 100 Cft	55800-0-0	26404-0-0		Reduction in quantity is due to leaving of capping slab under arch No. 384 ex at a higher level. Increase in cost is due to higher quoted rates.
420	per Cft 5-13-0	2880-0-0	932-0-0		Increase in cost due to higher quoted rates.
365	8-6-0	3068-0-0	-	765-0-0	A new method followed. Hence reduction in quantity and hence savings.
820	2-6-0	6906-0-0	6906-0-0	-	New design adopted. Hence the item is extra for fixed and bed blocks.
00 Cft	2-12-0	54000-0-0	15400-0-0	-	Increase in cost due to higher quoted rates.
00	7-2-0	19238-0-0	7088-0-0	-	-do- -do-

	1	2	3	4	5
5	5)	Soling with 6" size cubes including 25% of hard metal 2 1½" to 3" size for filling up void and 20% of gravel for filling, inclusive of water and consolidation etc complete	10400 Cft	42-0-0	4368-0
6)	6)	Collection and supply of hard granite metal 1½" size I.R.C. including stacking at site	3000	27-6-0	2190-0
7)	7)	Collection and supply of good gravel including conveyance and stacking it at site	8400 Cft	13-8-0	1134-0
8)	8)	Spreading hard granite metal 1½" size to 5" thick in two layers of 3" and 2" thick each, spreading gravel, watering and consolidation with power roller inclusive of all leads for water etc complete (Bottom 3" thick- hand roller) (Top 2" thick - power roller)	19200 Sft	4- 0-0	768-0
9)	(9	Providing guide posts wherever necessary in the embankment	L.S.		1500-0
10)	10)	Unforeseen charges and office contingencies for cutting rock etc	L.S.		11853
					60,000
		Excess Est Total			41,000
					1 ,01,000

Amount of revised sub estimate Rs. 1.01 lakhs) Rup

6	7	8	9	10	11
					Cost has risen because of higher quoted rates.
10200	56-15-0 for 100 Cft	5721-0-0	1054-0-0	-	
0 8500	40-15-0	3411-0-0 per 100 Cft	1291-0-0	~~6878-0-0~~	Because of widening the quantity has increased from 8000 Cft to 8500 cft. Added 1th ~~Statement showing increase in cost due to widening~~ ~~the embankment during~~ ~~running~~ ~~the~~ ~~running~~ ~~the~~ ~~Ulsoor~~ ~~bunds~~. higher quoted rates, the cost has increased.
0 3400 Cft	14-13-0 for 100 Cft	497-0-0		637-0-0	/ This provision was found sufficient in execution. Hence savings.
0 20400 Cft	9- 0-0	1732-0-0	1068-0-0		Increase in quantity is due to widening in the approach Added with the tender % cost has risen.
0				1500-0-0	Not utilised.
		776- 0-0	-	11077-0-0	This provision is against any unforeseen changes--Not utilised.
0-0		16130-0-0	65065-0-0 24065-0-0	24065-0-0	
0-0			41000-0-0		
0-0					

s one lakh and one thousand only.

K.K.AMBIAR,
Chief Engineer(Highways)

C. N. Parameshwara Rao 18.5.57

TECHNICAL ASSISTANT TO THE
CHIEF ENGINEER(HIGHWAYS)